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Aims and Scope: The principal mission of Prehospital and Disaster Medicine is the distribution of information relevant to the practice of out-of-hospital and in-hospital emergency medical care, disaster medicine, emergency public health and safety, and disaster mental health and psychosocial support.

Submissions: All manuscripts must be submitted through the Journal's online submission platform, ScholarOne Manuscripts, at http://mc.manuscriptcentral.com/pdm. Please review the Author Instructions and Author Checklist available online before finalizing a submission. All studies that include human subjects must be submitted for review or exemption to a formal human subjects ethics committee.

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23rd Congress on Disaster and Emergency Medicine

Governance of the Face of VUCA: the Power of Knowledge, Courage, and Solidarity in Health Systems

2-6 May 2025

Tokyo, Japan

More than 1,250 delegates from over 80 countries gathered at the Keio Plaza Hotel in Tokyo from 2 to 6 May 2025 for the 23rd Congress on Disaster and Emergency Medicine. The congress, co-hosted by the Japanese Association for Disaster Medicine (JADM), was one of the best-attended congresses in WADEM's history and featured a dynamic, engaging scientific program that included plenary sessions, workshops, roundtable discussions, oral and poster presentations, and simulation exercises.

The congress plenary speakers, Dr. Osamu Kunii, Prof. Sang Do Shin, Prof. Saini Yang, Dr. Masahiro Morikawa, Dr. Luca Pigozzi, Prof. April Llaneta, and Prof. Elizabeth Newnham gave exciting talks covering a wide range of topics such as mental health, Emergency Medical Teams (EMTs), primary care in disasters, disaster risk reduction (DRR), business continuity planning, technological innovations, and disaster resilience. The congress program also included several special sessions organized by the ARCH Project, WHO Kobe Centre, Kyoto University, Tohoku University, the International Committee of the Red Cross (ICRC), the World Society of Disaster Nursing, Prof. Jeffrey Franc, and New Orleans EMS and University Medical Center Trauma Center.

This supplement contains the abstracts accepted for presentation at the congress. All submitted abstracts were reviewed by at least two reviewers. Authors were asked to indicate if they had received an ethics approval from an accredited research ethics review committee (or Institutional Review Board; IRB) or if the data used in the abstract were from a publicly available source.

WADEM would like to acknowledge the hard work and dedication of the Congress Planning Committee, especially Prof. Yasuhiro Otomo, Prof. Shinichi Egawa, and Prof. Nahoko Harada.

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CAPACITY BUILDING

Full Scale Pediatric Hospital Evacuation: Charting the Course for Interstate Emergency Preparedness in the Aftermath of a Catastrophic Earthquake: Outcomes of a Significant Event Readiness Forum (SERF)

Patricia Frost RN, PHN, MS, PNP
National Pediatric Disaster Coalition, United States. Pediatric Pandemic Network, United States

Summary: This presentation will report on medical evacuation challenges involving pediatric specialty hospitals and the capabilities and challenges identified during the October 2022 National Pediatric Disaster Conference Significant Event Readiness Forum (SERF). The event drew pediatric subject matter experts and entities from across the nation to explore opportunities along the disaster response continuum addressing the multi-state and federal capability in the event of a catastrophic earthquake. Over 351 coalition, pediatric, EMS, air-medical state, regional, and national disaster response partners participated in this hybrid event. The purpose of a SERF is to foster information sharing and relationship development with a targeted group of stakeholders who do not always plan together.

The presentation will discuss how a Significant Event Readiness Forum provided a framework for stakeholders to understand command structures and situational awareness on the first responder and private sector level is needed to operationally manage military, and private sector medical transportation staging, triage, and deployment of ground and air transport associated with a no-notice catastrophic event.

In the event of massive infrastructure disruptions, facilities will be faced with decisions to self-evacuate or shelter in place. Prolonged staging will necessitate going "old school," informed by lessons learned from our colleagues in war and austere settings.

Lessons learned:

1. Facilitated discussions are needed across disciplines and sectors before community planning for pediatrics and other special populations.
2. SERF format results in improved communication and consensus planning across disciplines and private public partnerships.
3. Improvements are needed in developing and testing plans for interoperable interstate communication, coordination, and response.
4. Addressing the "basic" needs of the workforce and community in the first 24 hours for food, water, restrooms, shelter, and emotional support may be one of the most important factors in resilience and recovery.

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Breastfeeding in Crisis: Analyzing Social Media for Maternal Information Needs During War

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Introduction: The war in Israel, which began on October 7, 2023, posed significant challenges for breastfeeding mothers. Breastfeeding-focused Facebook groups quickly became crucial sources of information and emotional support. Analyzing posts from the first week of the conflict reveals specific concerns and informational needs of breastfeeding mothers in emergencies. This study identifies three central themes, provides insights into their concerns and informational needs, and formulates actionable recommendations for immediate responses during wartime.

Methods: This study employs a qualitative research methodology to examine the experiences of breastfeeding mothers within Facebook communities. A reflective thematic analysis was conducted on messages posted on two primary Facebook groups (total of 90.1K members) from the first day of the war (October 7, 2023) throughout the subsequent week.

Results: Three main themes emerged:

Mental State: Breastfeeding mothers reported severe stress and anxiety, fearing these emotions might affect their infants through breastfeeding. They sought information on anxiety medications and the safety of continuing breastfeeding while on treatment.

Milk Production: Mothers observed a perceived decline in milk production, raising concerns about their infants' nutrition and noting increased infant restlessness. They sought advice on enhancing milk production, including pumping techniques and galactagogues.

War-Affected Babies: Posts highlighted concerns for infants whose mothers were killed or missing, with offers to donate breast milk and offers to breastfeed infants in need.

Conclusion: During war or disaster, social media becomes a primary source of information. Breastfeeding mothers'

Facebook groups serve as sources of information, comfort, and connection. Concerns about the war's impact on breastfeeding lead to a need for evidence-based, reliable information that is immediately accessible. Required information includes the effects of maternal psychological state on lactation, medication use, and milk production. Additionally, these groups function as platforms for offering and receiving support among mothers and lactation professionals.

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The Use of Hotels as Alternative Care Sites in Disasters and Public Health Emergencies

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Introduction: Managing disasters and public health emergencies presents a complex challenge, especially in maintaining the crucial elements of surge capacity, i.e., the 4S: Staff, Stuff, Space, and System. This study focuses on using alternative care sites, focusing on hotels, during disasters and public health emergencies.

Methods: This study used a survey approach in two phases. In the first phase, the willingness to participate as an alternative care site was investigated among hotels in Bangkok, Thailand. In the second phase, the requirements for being an alternative care site were discussed with selected managers through a semi-structured interview session, including the legal implications of such utilization.

Results: The results indicated a general willingness among participating hotels to participate as an alternative care site. However, some hotels lacked the requirements for being an alternative care site.

Conclusion: Based on the requirements in this paper, there is a high potential for using hotels as alternative care sites during disasters and public health emergencies. However, there is a need for further research concerning practical admission criteria and legal implications. This study recommends a Delphi study among medical and legal professionals to investigate the criteria for utilizing hotels in this capacity.

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Capacity Building with Regional Collaboration in the Prehospital EMS Environment

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Summary: The Louisiana Health Department divides the state into 9 regions. Region 1 includes four parishes: New Orleans Parish, Plaquemines Parish, St Bernard Parish, and Jefferson Parish. Within Region 1, there are 11 ground ambulance agencies, made up of public and private agencies. One might think collaboration between 11 different public and private agencies would be difficult to accomplish; however, in this region, the agencies work exceptionally well together. There are a few key ways collaboration throughout the year increases interagency communication and coordination, and builds capacity during day-to-day operations and mass casualty events. The Metro Ambulance Council (MAC) serves Southeast Louisiana. It is comprised of all Region 1 EMS agencies, as well as the neighboring St. Charles Parish EMS agency. The MAC meets at least once a quarter; during these meetings, agencies report out and support each other's needs that arise. Agencies work together to create regional plans and protocols. Having the regional protocols and plans results in a single language across the board that all agencies follow, increasing the ease of coordination. In October 2024, regional EMS agencies conducted two mass casualty exercises, including a full-scale exercise with 8 of the 11 agencies participating, involving over 70 volunteer patients. This exercise tested and proved positive interagency communication and incident command structure among the eight responding agencies. The second exercise was a tabletop between regional EMS agencies and 12 regional Hospitals, for EMS, this tabletop tested the Regional Mass Casualty transportation plan. It was found that through good communication and coordination within the regional EMS agencies, they were able to move all 400 simulated patients in a timely manner, as laid out in the regional plan. The high level of coordination between regional EMS agencies has led to a significant increase in pre-hospital EMS capacity.

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Crisis Communications for Leaders in Disasters

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Introduction: The COVID-19 crisis and future crises stress the medical system and require leaders to rise to the occasion. Some leaders are very successful while others flounder. This was seen at every level of government and health care. Applying the principles of crisis leadership and communication (and avoiding

pitfalls) will increase the collective readiness to respond effectively during stressful times.
Methods: Literature review and US Centers for Disease Control and Prevention (CDC) guidelines.
Results: While there is robust literature on the topics of crisis communications and leadership, this training is lacking in healthcare circles. This presentation aims to introduce the subject and advocate for increased training in Crisis Communications. The US CDC has developed a freely downloadable training manual, along with tools for rapidly developing a crisis message. Furthermore, a checklist to help with the presentation and a list of communication pitfalls to avoid are included. These tools allow for both pre-crisis preparation and just-in-time training.
Conclusion: Leaders can use these tools to prepare in advance for crisis communications, avoiding common mistakes that reduce communication effectiveness.

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An Evaluation of Wound Healing When Using 3D Printed Suture vs Commercial Suture in a Mouse Model

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Introduction: 3D printing technology has demonstrated great efficacy in ad hoc manufacturing of surgical supplies such as needle drivers, forceps, and tissue suture materials. 3D printed nylon sutures manufactured using a fused deposition modeling (FDM) 3D printer exhibited multiple advantages over commercial nylon and polybutester suture materials, including higher ultimate tensile strength and ultimate extension. A mouse model study was conducted to evaluate the healing of laceration wounds repaired using 3D printed nylon suture compared to commercial polybutester (Novafil) suture.
Methods: The 3D printed sutures were manufactured using Ultimaker S3 FDM printers and nylon filament, then sterilized using ethylene oxide sterilization. Twenty mice were included in the study, each receiving a 2 cm dermal laceration along their back. Ten mice had their lacerations repaired with simple interrupted 3D printed nylon sutures, and ten with simple interrupted polybutester sutures. All mice underwent daily wound assessments for 7 days, followed by euthanasia and harvesting of local tissue around the laceration site for objective measurement of inflammatory response via FlowJo analysis of F4/80+/80+&CD45+ macrophages and cytokine array.
Results: No wound complications, such as dehiscence or infection, were observed in either group. The mean CD45+&F4/80+ macrophage (%) for 3D printed and polybutester sutures was 29.3 and 27.7 (p=0.59, from 2 two sample t-tests), resulting in no statistically significant difference. Additionally, there was no significant difference in tissue inflammation when evaluating cytokine response.
Conclusion: Data from this study suggests no difference in wound healing, infection, or inflammatory response between 3D printed nylon and polybutester sutures. The cost of manufacturing 3D-printed suture materials is significantly lower compared to the per-unit pricing of commercial suture materials. Furthermore, 3D printers provide the agency to produce critical supplies on an ad hoc basis with potential applications in low-resource medical scenarios such as rural/developing regions, war zones, or refugee encampments.

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The Dead Sea Ordinance–Response to an MCI Event in a Remote Geographical Location with Limited Emergency Services

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Ministry of Health, Israel

Summary: Following the 7th of October and the Iron Swords war, over 10,000 displaced people are located in the Dead Sea hotel complex, which is far from settlements and health services, and where emergency services are limited. The lack of health infrastructure and the long evacuation distances to the hospitals require a unique operating model.

For this purpose, an assessment of the area and capabilities was carried out. A preparedness ordinance was written for the activation of the response in an MCI in the Dead Sea area, which includes:

A primary triage site will be operated near the event site with the help of the medical teams stationed in the hotels, and they will undergo a refresher on the principles of trauma care. Placing EMS, including an incident commander, and deploying rescue vehicles to their crews, with civil-military cooperation to evacuate casualties.

The hospitalization complex at the MOH will determine evacuation targets: Urgently injured patients will be transferred to the hospitals by airplane and ICU ambulance. Non-urgent casualties will be held at the site until an additional evacuation force, such as a bus or an ambulance, is assembled.

An exercise was held to test readiness and determine the factors involved in MCI. The Ministry of Health's hospitalization complex led the exercise, which aimed to create a working language and cooperation between the parties and work on the operational concept according to the order.
Points to save:
- Cooperation between all the factors in the field and hotels

Points for improvement:
- Due to travel distances, car evacuation is less realistic; therefore, there is a need for air evacuation.
- Accuracy of the role of the hospitalization complex /EMS/ Home Front Command
- Training and equipping the medical and nursing staff on MCI

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Challenges and Perceived Impacts of Ambulance Diversions During Emergency Department Overcrowding: A Multi-Stakeholder Study

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Introduction: Ambulance diversion has emerged as a strategy to address Emergency Department (ED) overcrowding, but the question of when or whether diversion should be triggered is widely debated. Although the positive and adverse impacts of diversion have been primarily studied using quantitative data, little is known about the experience and perceptions of key stakeholders involved in diversions. Our study aims to explore the challenges and impacts of ambulance diversion as experienced by key stakeholders and their suggestions for improving the diversion process.
Methods: Semi-structured interviews were conducted with key stakeholders, including physicians, nurses, and paramedics, across two EDs and four fire stations. All interviews were audio-recorded following consent and transcribed verbatim. The transcripts were subjected to thematic analysis to identify key themes and sub-themes.
Results: A total of 33 stakeholders were interviewed. The primary reasons for ambulance diversions were perceived to be resource constraints in EDs, overcrowding and bed block situations. Challenges during diversions included communication breakdowns, operational delays, lack of clarity in diversion criteria and emotional stress for both EMS and hospital staff. Participants felt diversions impacted patient safety, staff morale, system efficiency and could generate inter-institutional conflict. Suggestions on improvements focused on use of alternative care pathways, improving hospital's flow issues, better information sharing, and optimizing the diversion process through strategizing the timing and duration of diversions. Reworking the hierarchical approach of dissemination of information to ground staff was also suggested.
Conclusion: This study highlights that while diversions may offer temporary relief for overwhelmed hospitals, they also pose challenges and negatively impact receiving hospitals and EMS operations. The findings underscore the need for systemic improvements to address the root causes of ED overcrowding and enhance understanding among stakeholders involved in diversions.

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Actual Status and Issues of the Medical Relief System for Important Persons

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Introduction: There has been an increase in murders and attempted murders of important persons over the past few years. Assault on important persons is a form of terrorism, and it is necessary to minimize damage for the sake of social peace and order. Healthcare providers (HCPs) are required to respond quickly to save lives when an incident occurs. However, no data have shown whether HCPs and medical institutions are adequately prepared. We conducted a survey on the current status of the medical system for responding to assaults on important persons.
Methods: A questionnaire survey was conducted among physicians on the largest medical portal site in Japan. The questionnaires are: A. Experience in receiving request to deal with injuries and/or illness of important persons, B. Specific preparation for providing treatment, C. Capability of dealing with injuries of important persons at your medical institutions, D. Treatment experience for injured important persons, and E. Evaluation of the medical system for important persons in Japan. Participants were asked to give anonymous responses.
Results: A total of 1091 physicians participated in this survey. A. Of the 1091 participants, 78 physicians (7.1%) have received the request, B. Of those, 51 physicians (65.4%) had made specific preparations, C. 109 physicians (10.0%) responded that the medical system was in place, D. Only 18 physicians (1.6%) had experience treatment both gunshot and stab wounds, and E. 58 physicians (5.3%) answered that the medical system has been established. It has become clear that there are very few physicians who can provide proper medical care to injured important persons, and the system has not been well established either.
Conclusion: In order to protect society from the threat of terrorism, further efforts to establish a system that can provide appropriate medical care to injured persons are required.

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Contributions of Japan Disaster Medical Assistance Team (DMAT) Secretariat to the Establishment of Moldova's DMAT and the Achievements of the Training Program

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Summary: From January 2023 to March 2024, a project supported by the Japan International Cooperation Agency (JICA) aimed to establish a DMAT in Moldova. The Japan DMAT Secretariat designed a comprehensive training program and provided essential materials. Collaboration with Moldova's National Center for Emergency Prehospital Medical Assistance (CNAMUP) and the National Agency for Public Health (ANSP) was crucial in enhancing Moldova's disaster medical capabilities. Key activities included training sessions in Japan, site evaluations, and the implementation of a training course for future trainers in July 2024. More than 20 participants from Moldova's key medical institutions, including the CNAMUP and the Institute of Emergency Medicine, completed the training. A significant achievement was the successful Training of Trainers course, where Moldovan professionals, who had previously received instruction in Japan, led the sessions. This marked a major step toward self-sufficiency in disaster medical response. The project not only improved the knowledge and skills of medical professionals in disaster scenarios but also laid

the foundation for Moldova to develop its own disaster medical system tailored to its unique needs. The initiative highlighted the importance of fostering local expertise to create a sustainable and resilient disaster response framework. Future efforts should focus on adapting the training program to Moldova's specific disaster risks, incorporating lessons learned from actual disaster experiences, while maintaining cooperation with Japan to ensure ongoing support and development. This project exemplifies the value of international collaboration in building strong, locally-driven disaster response systems that can save lives in critical situations.

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Factors Influencing Onsite Attendance Attitudes during Disasters

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Introduction: Hazard scenarios during torrential rain disasters in Japan involve a high proportion of elderly people and accidents indoors. One of the reasons for this is the lack of available workers at welfare facilities for the elderly. The purpose of this study is to examine the factors that affect the attitudes of staff toward onsite attendance at welfare evacuation shelters.
Methods: Thirty welfare evacuation shelters were randomly sampled from 89 shelters in a city, and a self-administered, anonymous questionnaire survey was conducted by mail. The levels of disaster preparedness and disaster awareness were measured from responses, and their relationship to attitudes toward onsite attendance during disasters was analyzed.
Results: A total of 113 staff subjects were analyzed. Responses of walking to work in the event of a disaster (p=0.002, x2test), being aware of a disaster manual (p=0.004, x2test), and having defined roles at the facility in the event of a disaster (p=0.034, x2test) were associated with onsite attendance. Disaster preparedness was associated with the ability to visualize disaster situations (p=0.009, Mann-Whitney U test), the ability to sense impending disasters (p=0.019, Mann-Whitney U test), and concern regarding disasters (p=0.001, Mann-Whitney U test). Compared to non-attendees, attendees were more concerned (OR 1.261; 95% CI: 1.025, 1.551) and less anxious (OR: 0.846; 95% CI: 0.719, 0.996) about disasters.
Conclusion: The results suggest that encouraging facility staff to be more familiar with disaster preparedness and make firmer decisions to act in the event of a disaster can improve attitudes toward onsite attendance during disasters.

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A Rapid Transformation of an Existing Testing Facility Area for COVID-19 into a Fully Functional Pediatric Emergency in 72 Hours' Time—An Experience from a Tertiary Care Teaching Hospital

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Introduction: With the second surge of the COVID-19 pandemic, there was a precipitating need for capacity enhancement of the emergency area in our setting, regarding the number of beds and circulation space. The existing facility for COVID 19 testing of our employees was zeroed in on to be transformed into a fully functional pediatric emergency department.
Methods: With a period of 72 hours, the project was undertaken with precise ground-level planning, listing and cohorting of activities, and clear earmarking of roles amongst the team members. The activities were transcribed onto a Gantt chart, assigned timelines to them, and the rate-limiting steps were identified. The civil and electrical works entailed: 1) dismantling of existing structures, 2) putting up of wash basins, 3) RO water system, 4) placement of signages, 5) setting up of a registration area, 6) placement of curtain assembly for each bed, 7) creation of electric-panels at head ends of beds, 8) provision of UPS points, and 8) alternate source of electricity for life saving equipment which were undertaken on a war footing. The IT points were mapped; the telephone line for internal communication and the LAN were extended. The extension of manifold pipeline works from the Trauma ED area to the pediatric emergency department is a rate-limiting step in our timelines, and the execution of it kept us ahead of the planning curve.
Results: The floor area and beds that became available through this transformed new pediatric emergency department were about 279 square meters and 16 beds, almost 3.6 times the floor area and double the bed strength of the old pediatric emergency department.
Conclusion: While it required significant planning on paper and onsite visits by the team members from Hospital Administration, Pediatrics, Engineers, and Manifold, creating a spacious, contemporary pediatric emergency department was made possible within 72 hours.

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Preparing a Small Rural Hospital for Mass Casualty Incidents: Lessons from Yoseftal Medical Center in Eilat, Israel

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Introduction: Mass Casualty Incidents (MCIs) overwhelm health care systems, necessitating effective preparedness. Yoseftal Medical Center is a small community hospital in Eilat, on the southern tip of Israel. The massacre on

October 7, 2023, unmasked significant gaps in emergency preparedness protocols, prompting a comprehensive rehaul. Since the beginning of the Iron Swords War, Yoseftal has faced unprecedented challenges in providing medical care to its local population and the waves of evacuees from across Israel. In parallel, it must reckon with new threats of missile attacks and the risk of large-scale MCIs, particularly challenging due to its remote and isolated location. In a matter of weeks, Yoseftal successfully transformed its capabilities to manage a large-scale MCI, thanks to assistance from institutions within the broader healthcare system. This study explores how Yoseftal enhanced its MCI readiness using available resources and innovative approaches.

Methods: The methodology included a literature review, a review of procedural data from the Israeli Ministry of Health, an on-site survey, participation in a simulation exercise, and interviews.

Results: Three preparedness stages were observed: 1) Pre-October 7, 2023: The hospital complied with routine emergency drills and inspections suitable for small-scale casualty incidents. 2) October 7, 2023, to February 2024: This capacity-building phase included consultations, coordination with local and national institutions, equipment and personnel reinforcement, infrastructure upgrade, protocol updates, and drills, including guided isolated exercises and full-scale institutional exercises. 3) February 2024-present: This phase is characterized by the ongoing maintenance of standby teams and managers, equipment reinforcement, and drills. Each phase was driven and maintained by solidarity within the local community and the broader health system.

Conclusion: Collaboration, intensive training, and community solidarity are critical for effective MCI preparedness in small community hospitals.

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Water Distribution Planning for Saltwater Intrusion in the City of New Orleans

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Summary: In 2023, extended drought conditions in the Mississippi and Ohio River watersheds brought Mississippi River flow to historic lows. In September, local governments and water systems across Orleans, St. Bernard, and Jefferson Parishes (Counties) received a warning that saltwater from the Gulf of Mexico could reach drinking water intakes within weeks. Due to a lack of reverse osmosis/desalination equipment at treatment facilities, regional contingency plans were developed to protect drinking water for approximately 852,762 residents. Increased sodium and chloride concentrations have documented long-term health impacts and present a health risk, particularly to critical populations including infants/young children, residents with chronic health conditions, residents without automotive transport, and residents with limited income. A State of Emergency declaration was approved by President Biden on September 27, 2023, to provide federal support to the State of Louisiana.

Local water distribution plans relied on coordinated logistics efforts between local and regional stockpiles, partner donations, and contracted services. A bottled water distribution plan was modeled on previous COVID-19 mass testing/vaccination plans using high-throughput drive-through and walk-up sites. Home delivery teams and call centers were considered for critical populations unable to independently pick up resources. Engineering alternatives, including upstream freshwater dilution with a temporary pipeline and barging, were pursued by regional and state partners to reduce the likelihood of distribution plan activation.

Due to increased river flow and rapid construction of a sill in the Mississippi River by the US Army Corps of Engineers, increased salinity levels ultimately never reached New Orleans. Nevertheless, this regional planning process serves as a model to rapidly expand capacity for commodity distribution in a major urban city that is experiencing major environmental, health, and infrastructure challenges due to climate change.

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Identifying Best Practices for Improvement of Pediatric Trauma Program Mass Casualty Incident Plans

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Introduction: Traumatic Mass Casualty Incidents are becoming more common in the United States. Recognizing the impact of mass casualty incidents (MCI), the American College of Surgeons recommends that trauma programs be integrated into hospital disaster plans and develop a plan for surgical response to mass casualty incidents. To date, there are no guidance documents for MCI preparedness and response specific to pediatric surgical teams and pediatric perioperative hospital space. Development of a guide to creating a pediatric surgery-specific MCI response plan would improve preparedness and potentially outcomes for children affected by traumatic MCIs.

Methods: Researchers conducted semi-structured focus group discussions with subject matter experts (SME) from eight

Pediatric Level I Trauma Centers in the Federal Emergency Management Administration's Region V. Subject matter expert roles included Trauma Program Director, Trauma Surgeon, Trauma Coordinator, Emergency Manager, Emergency Physician, and Operating Room Leadership from each institution. The interviews were recorded, and verbatim transcripts were created to develop a comprehensive dataset for analysis.
Results: Analysis of the focus group discussions identified four key themes which—in their presence or absence—affect the effective implementation of an MCI/surge plan: (1) departmental collaboration for effective implementation; (2) identification of challenges such as resource management and coordination; (3) use of regular drills and exercises to prepare staff and refine protocols; and (4) a commitment to continuous improvement to the plans.
Conclusion: As pediatric health care institutions, particularly trauma programs, confront the complexities of modern emergency response, it will be essential that they address the four key themes listed above in their MCI response plan. With a framework adapted from these focus groups, the study authors created a guidebook to create and optimize a surgical surge response plan for trauma programs to facilitate MCI preparedness and response.

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Japan DMAT Secretariat International Operations: Building Disaster Medicine Capacity Through Global Collaboration and Training

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Summary: The Japan DMAT Secretariat's International Operations Section supports international requests to share Japan's disaster medical knowledge. Its activities include technical transfer to developing countries, organizing disaster medical symposia, and gathering advanced insights to enhance Japan's disaster response systems. A review of Japan DMAT Secretariat International Operations Section activities were conducted. The results of the review include:

International Collaboration and Technical Transfer - Japan has provided disaster medical expertise to developing and neighboring countries, drawing on its experience from the Great East Japan Earthquake. Initiatives include technical transfer across Asia and joint symposia with the US and South Korea. Participation in International Conferences and Workshops - Japan DMAT actively shares knowledge at international forums, such as the APCDM and NDMS Summit, presenting Japan's disaster medical achievements.

Training and Hosting Programs - Japan DMAT provides technical support through training to countries like Moldova, Ukraine, and Taiwan, assisting them in building local disaster medical systems. Field and Operational Training - Collaborative training with organizations like the U.S. ASPR strengthens mutual disaster response capabilities, including tabletop and field exercises for potential large-scale disasters.

Knowledge Exchange and Cooperative Frameworks - Regular exchanges with countries like Israel, Taiwan, and South Korea support disaster medicine knowledge sharing and cooperation.

The International Operations Section is essential in advancing disaster medical knowledge and technologies globally. To further expand these activities, resource and budget support are needed, along with deeper cultural and political understanding tailored to the partner country's needs. Given Japan's risk of large-scale earthquakes, the section's work fosters smooth coordination with international medical teams, leveraging these collaborative relationships.

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Health Care Facility Characterization for Combat Casualty Care Simulation

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Introduction: As part of the congressionally mandated NDMS Pilot Project, researchers sought to simulate the capabilities and patient care surge capacities of NDMS-enrolled facilities in the National Capital Region (NCR). This element of the simulation project focuses on accurately characterizing HCF resources, specialty capacities, and surge potential to support simulation-based patient throughput modeling in high-casualty scenarios.
Methods: The project team selected 16 acute care facilities enrolled in the NDMS Bethesda-FCC Region for simulation, excluding psychiatric and rehabilitation-only centers. Using NDMS provided data and publicly available sources, the team developed a detailed HCF characterization framework that includes specialty center designations (e.g., trauma and burn centers), bed type capacity, and geospatial data. Unlike traditional models, this characterization also captured specific medical specialties required for combat casualty care, including niche trauma services. To approximate real-world conditions, the simulation used "licensed beds" as a baseline, with an assumed percentage available as surge capacity, representing the portion of beds theoretically available for NDMS cases.
Results: The characterization process resulted in a comprehensive HCF dataset that reflects the nuanced capacity of each

facility, including relevant specialties and trauma-related capabilities. This structured HCF data supported realistic patient-to-facility assignments in the simulation, accurately modeling the limits and constraints of each HCF's ability to manage complex trauma and medical cases from large-scale combat operations.

Conclusion: This in-depth characterization of HCFs provides a foundational tool for understanding and optimizing surge capacity in high-casualty scenarios. By capturing detailed specialty and surge capacity data, the model offers a more precise framework for assessing regional healthcare readiness. Future work can confirm or revise current HCF capabilities and capacities through direct contact with the specific HCFs.

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Exercising to Develop a Business Continuity Plan

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Summary: Ensuring continuity of service in any business is a priority, but in most cases, it does not impact life and death, except in a health care setting. How do you ensure that staff engage in the development and testing processes to meet their needs, as well as those of the organization, before activating their plan? This question was recently tested when a Local Health District undertook a project to rewrite the business continuity plans(BCP) to promote and increase awareness of the impact on services.

After extensive research, a BCP template was developed to ensure a standardised approach throughout the Local Health District. Key stakeholders were identified and invited to meetings and exercises. To inform the development of BCPs for each facility, simulated exercises of outages were conducted. This provided information for the development of the BCPs. Scenarios covered interruptions to the supply of power, gas, both medical and natural, and water.

The scenario progressed through discussion and directed questions. The exercises were recorded. This provided an opportunity for the development of the BCP to enhance current response assumptions and gain leverage for further engagement and development of robust and relevant plans.

Over 100 people participated in face-to-face sessions, with the majority being disaster portfolio holders, executives, department managers, and clinical managers. A review of notes taken showed that the exercise elicited a greater appreciation by attendees of the impact (if any) on their specific service and the need for development of service-specific plans. This approach to plan development was successful as it led to the development of contemporary plans while considering facility needs and expectations. This exercise provided an opportunity to review the level of understanding of a Business Continuity plan and the impacts such outages can have on the service delivery of individual departments.

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Nurses on the Frontline Caring for Patients with COVID-19: Lived Experiences

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Introduction: Nurses who have experienced caring for patients with COVID-19 have the potential to identify local and systemic factors that contributed to what helped support the nurses and their ability to provide care and what did not. The three research questions were: 1) What are the experiences of nurses providing care to patients during COVID-19 in community, hospital, and long-term care settings, and how do these experiences impact their professional and personal well-being? 2) How do nurses perceive the effectiveness of organizational strategies, including crisis standards of care, personal protective equipment (PPE) provision, and support for personal preparedness, in supporting their response and practice during the COVID-19 pandemic? 3) What are nurses' perceptions of the organizational, local, county, state, and federal policies that either support or hinder their ability to effectively respond to the challenges posed by the COVID-19 pandemic?

Methods: A qualitative approach was used to interview registered nurses, who had cared for patients with COVID-19 in one of three health care settings (hospitals, long-term and residential care facilities, and community-based or public health response).

Results: Results indicate that most of the nurses felt supported by their immediate supervisor but abandoned by organizational leadership. They experienced challenges with equipment, staffing, emotional support, changing policies, and grief, and felt supported by work colleagues and family.

Conclusion: Healthcare systems were unprepared to respond to a pandemic. The nursing workforce was affected by the lack of preparedness. Preparations for the next pandemic should be underway to address patient care needs and the health and welfare of nurses on the frontline, including maintaining adequate supplies of personal protective equipment, managing a surge of patients, and providing physical and emotional support to nurses and other healthcare workers.

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Building an Open Eco-System to Capacitate Challenge-Driven Research and Human Resource Development for Health Security

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Summary: Driving Force for Innovation

To tackle the growing health crises, including natural disasters and pandemics, an Open Ecosystem has been created at an academic center to accelerate challenge-driven research and human resource development for health security. Health Security here aims to prevent, prepare for, respond to, mitigate, recover from, and reconstruct to protect and improve people's health during any crisis, whether of sudden onset or silent progression.

Significant Findings: This ecosystem has three ecological cycles that reciprocally enhance performance for health security

1. Policy, Practice, and Academia

The first is an interconnection of Policy, Practice, and Academia. For example, a memorandum of understanding is in place between the national headquarters of disaster medical assistance teams and academia to advance simultaneously solution-oriented R&D and expertise training for health security. Additional mechanisms are being developed for national/local authorities, as well as relevant organizations, to fuse academia with policy and practice.

2. Research, Education, and Social Contribution

The second is a circulatory interconnection of the three functions of Research and Development, Human Resource Development, and Social Contribution, which encompasses on-site practices, advancing policies and social systems, and strengthening communities.

3. Transdisciplinary, Local/Global Boundary-Crossing Networks

The third consists of three-layer networks: 1) transdisciplinary partnership of medicine, public health, disaster reduction engineering, public policy, law, economics, social psychology and other natural and socio-behavioral sciences; 2) networking with the national organizations of infection diseases, global health, public health, disaster medical assistance team headquarters, governments, universities and organizations; 3) global networks of national and international agencies and academic institutions around the world.

Open Platform for Co-Creation

Based on the above founding philosophies, the Centre for Health Security at Kyoto University was established in April 2024 as an open platform for individuals and organizations worldwide to collaborate and advance local and global health security activities.

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Full-Scale Disaster Drill Assessing the Impact to ER Flow By Utilizing a Pre-Identified Ebola Treatment Room

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Summary: Emergency Department (ED) evaluation of suspected Viral Hemorrhagic Fever (VHF) patients can significantly disrupt an institution's ED operations. Given the significant risk of contamination, best practice is to close off areas where the patient has been present. While designed to protect healthcare workers and other patients, this can have unintended consequences, such as closing off access to critical areas and supplies. A full-scale disaster drill was conducted at a New York City (NYC) designated Ebola Receiving Center. A fictitious patient suspected of VHF was taken to the designated VHF treatment area through EMS and walk-in triage. The impact on normal patient/staff flow and access to critical resources was documented by trained observers.

The following areas were unintentionally blocked due to patient transport to the designated VHF treatment room:

1. Arrival via EMS: a) critical elevators to OR, MICU, SICU, and Labor and Delivery, b) ED Radiology including X-Ray, CT, and ultrasound.
2. Arrival via walk-in: a) waiting room, b) triage area, c) the entirety of the non-critical adult emergency department, approximately 81 patient treatment locations.

This drill highlighted the potential for significant disruptions to ED operations when managing VHF patients, even when using a pre-identified VHF treatment room. By identifying feasible access to appropriate care areas, hospitals can mitigate these challenges and ensure the continuity of daily operations. EDs should consider similar strategies when developing their VHF response plan. The Division of Disaster Preparedness & ED administrators assessed the ED's architectural blueprint to locate areas of entry/egress and the ED's treatment/diagnostic areas. Multiple attempts to find a space within the emergency department to care for VHF patients without closing the ED proved difficult. However, after reviewing the blueprint, an ideal area outside the ED treatment areas was identified.

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Avoiding ED Disruption with Thoughtful Implementation of a Hot Triage and Hot Treatment Area for Treatment of Patients Under Investigation for Ebola Virus Disease

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Summary: A 2021 drill evaluating a patient under investigation for Ebola Virus Disease (EVD) revealed a significant vulnerability in the Emergency Department (ED) workflow, resulting in a loss of access to critical elevators, ED radiology, and ED treatment areas. This report describes the development and implementation of a new treatment area and process to care for patients with concerns for Viral Hemorrhagic Fevers (VHF). ED Administration and the Division of Disaster Preparedness performed a Gemba walk to evaluate ED Viral Hemorrhagic Fever workflows and assess treatment areas that minimally impact the ER flow. For Walk-ins: The Gemba walk identified an underutilized triage room outside the main ED. This room was converted to a "Hot Triage" room, where high-risk patients are cared for outside the ED. This allows other patients to navigate the entire ED without crossing the VHF patient's path. For EMS: The Gemba walk identified that EMS patients should not proceed past ambulance triage, otherwise significant closures would occur. Therefore, EMS should transport patients into the decontamination showers directly from outside the building. If patients make it into ambulance triage, the door to that area can be secured, and a team will manage the patient there. A just-in-time training document was created that describes the novel workflows above and delineates the preparation that must be taken before entering the patient's room. A PPE cart was developed that included pre made kits for VHF patient evaluation. Medical equipment listed in the document and found in the cart included telemonitor, resuscitation supplies, POC blood gas and malaria PCR cards, baby monitor, and critical contact numbers. Identifying appropriate care areas is crucial to a comprehensive VHF response plan. By isolating and evaluating potential VHF patients early and outside the department, EDs can minimize the risk of transmission and maintain hospital operations.

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Seismic Lessons Learned: The Evolution of Public Readiness and Crisis Communication in Almaty

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Introduction: The southern capital of Kazakhstan, Almaty, located in a seismically active region, experienced two significant earthquakes in January and March 2024. Despite longstanding educational programs, the January event exposed significant gaps in public crisis response, resulting in numerous injuries due to panic-driven behavior. This study aimed to evaluate the shift in public preparedness and crisis communication between these events.

Methods: A comprehensive content analysis was conducted using over 500 articles from prominent Kazakh- and Russian language news outlets, 300 official publications by the Ministry for Emergency Situations, and approximately 5,000 social media posts. This analysis examined the timing, content, and public response to emergency communications, assessing changes in behavior influenced by the intensified educational efforts after January.

Results: The January earthquake highlighted critical delays in communication (an average of 20 minutes), leading to widespread panic. Injuries included 12 severe cases from residents jumping from buildings and numerous reports of frostbite, as temperatures reached -15°C. The Ministry for Emergency Situations responded with targeted educational campaigns, distributing over 200,000 printed evacuation guides and conducting over 1,200 focused training sessions. By March, communication response times improved to 5 minutes, and social media analysis revealed a 60% increase in posts mentioning organized and calm public behavior. Posts frequently mentioned that residents knew evacuation points (e.g., nearby schools) and followed pre-established procedures, demonstrating a better understanding of safety protocols.

Conclusion: The comparison of the January and March 2024 earthquakes demonstrates the essential role of adaptive public education and rapid crisis communication in enhancing community preparedness. Targeted interventions improved public knowledge, reduced injuries, and restored confidence in emergency management systems. These findings emphasize the need for continuous, practical, and localized educational efforts to effectively bridge gaps in public readiness for disasters.

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Daily Surge: How Do We Define Same and How Do We Plan to Staff the Inevitable Surge Which Will Come When It Comes!

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Introduction: Surge attendance is an ill-defined, site-dependent concept. Our site is a small rural ED in Ireland with an inpatient bed capacity of 225 beds. It is not unusual now for

daily ED attendance to exceed total hospital bed capacity. With an average 20% admission rate, a hospital must achieve a length of stay of less than four days for acute admissions to maintain elective and day care capacity. Careful monitoring of daily, weekly, monthly, and annual attendance trends is required to ensure adequate patient flow through modeling.
Methods: Trend analysis of system-generated attendance reports to evaluate 10 years of daily attendance patterns (2014- 2024) and predict potential future bottlenecks. Data examined in Excel.
Results: Daily attendance ranged from a low of 1 to a high of 242 in 2024. Average DAILY attendance increased from 93.12 in 2014 to 169.83 in 2024. First day > 130 was 2014, > 150 was 2017, > 170 was 2019, > 190 was 2021, > 210 was 2022, > 240 was 2024. Daily attendance standard deviation was 14.27 in 2014 and 20.52 in 2024. Minimum daily attendance ranged from 48 in 2014 to 108 in 2024.
Conclusion: Average daily attendance in 2024 is similar to maximum daily attendance in 2019, which occurred only once that year. In 2015, there were 22 days with attendance > 120, which would have been considered surge attendance at the time. In 2024, there have been 304 days above 120. By comparison, there have been 29 days above 210 attendances in 2024 (Average + 2 standard deviations). In predicting future staffing models required one is required to plan for the daily average + 2 standard deviations to ensure that 95% of the time, there will be adequate staffing. Monitoring trends carefully will ensure departments are adequately staffed and avoid excessive workload and burnout among ED staff.

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Disaster Information Consumption in Select Batangas Municipalities within the 14km Radius Taal Volcano Danger Zone

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Introduction: Disaster communication is essential for informing the public about potential risks, preparedness measures, and evacuation plans. This study examines disaster communication processes, patterns, best practices, and gaps within the 14 km danger zone of Taal Volcano in the Philippines.
Methods: The quantitative method was used in this study. Questionnaires were developed to be used in interviewing Disaster Risk Reduction Management Officers (DRRMO), Barangay Captains/Officials and residents of the affected municipalities. The respondents' various responses were described and analyzed to identify the communication processes, patterns, best practices and gaps in disaster communication and information consumption.
Results: Authorities predominantly employ one-directional communication with residents, utilizing various channels to ensure timely information dissemination. Pre-disaster efforts focus on public education campaigns, community meetings, and distributing preparedness materials. Municipalities leverage social media updates, barangay announcements, seminars, monthly meetings, contingency plans, school involvement, go bags, and the active presence of barangay officials and youth council members. During the disaster phase, early warning systems, emergency alerts, and coordinated responses through barangay halls' Emergency Operation Centers provided real-time communication. Post disaster communication emphasizes recovery efforts and transparency, utilizing two-way communication via social media, texts, and phone calls to address concerns and provide assistance. Best practices include providing timely and relevant information, utilizing multiple communication channels, clear messaging, community engagement, consistent messaging, and leveraging the internet for efficient dissemination. It also identifies gaps such as limited access to disaster information among certain populations, particularly senior citizens reliant on traditional media.
Conclusion: Effective disaster communication processes and patterns of information consumption are vital for enhancing community preparedness, response, and recovery. The study underscores the importance of diverse communication channels, community engagement, and addressing gaps to build resilient communities capable of withstanding and recovering from disasters like the Taal Volcano eruption.

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Disasters Divided: Federalism, Authority, and the Role of States in US COVID-19 Pandemic Response

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Introduction: The COVID-19 pandemic was an unprecedented, catastrophic public health emergency. With an absent executive branch, all fifty states scrambled to respond to a crisis that had broad, far reaching impacts. Fiercely bitter partisanship was often blamed for causing inadequate, variable US pandemic response efforts. But what explains why the United States, despite its wealth of resources and strong institutions, had a slow, fragmented, and highly politicized pandemic response? A lack of policy alignment, or propensity toward misalignment, in the United States contributed to its uniquely disappointing pandemic outcomes.
Methods: Using a qualitative approach, they conducted (a) elite interviews of bureaucrats at the state-level in public health agencies, emergency management agencies, and the governor's office (n=47) and (b) a historical analysis of the development of disaster and pandemic policy in the United States.
Results: Three main variables within a fragmented institutional structure explain alignment and misalignment in the US pandemic response: (1) authority, (2) bureaucratic structures, and (3) capacity. These three variables interact within the greater overlapping fabric of federalism and state-specific contexts that are impacted by prior policy decisions (path dependency), institutional design, and inter- and intra-governmental relations.

Conclusion: These findings have broad implications for future US disaster response and public health emergency response capacities and capabilities. They also help further our understanding of federalism: its impact on disaster response and public health emergencies, the intersection of public health and emergency management, and the importance of governors in a federalist system experiencing a crisis.

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Transforming a Hotel into a Hospital: The Playbook Solution for Converting a Hotel into a Full All Hazards Hospital During Medical Surge with ICU and Med-Surg Capabilities

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Summary: During times of medical surge, alternative care sites (ACFs) offer additional bed space for expansion of inpatient services. However, traditional ACFs often fail to have adequate infrastructure to support robust clinical operations (lack of adequate wraparound services, such as lab and radiology) and cannot usually provide anything other than subacute services. Hotels are most closely proximate to hospitals in many ways: individual rooms with toilets and showers, space for a kitchen, adequate elevators to accommodate stretchers, PA systems, etc. Medium-sized and convention-sized hotels could be converted to hospital space, offering the potential for wraparound services that allow admission of all patient types, including ICU and general med-surg patients. This research was funded by the US Department of Defense as part of the "Modular/Convertible Capability Pilot Project" to increase medical surge capabilities and capacities to care for our Nation's combat casualties and to inform nationwide changes to the existing National Disaster Medical System (NDMS).

Since ACFs operate outside of traditional hospital buildings, hotels present a viable option for an ACF. The result of this project was Team Colorado's Hotel2Hospital Playbook, which provides instructions and guidance for the just in-time conversion (within 2-4 weeks) of any hotel into a hospital. The Playbook includes strategies to select and engage a Partner Hotel; guidelines for using, augmenting, and adding to the existing hotel infrastructure to create a hospital-like care setting; an approach for converting hotel rooms into patient care rooms, clinical equipment, and staffing needs; and how to establish services such as Lab, Pharmacy, and Radiology in a hotel facility. The H2H Playbook includes architectural drawings, engineering plans, checklists, and other resources that hospital emergency management personnel and other emergency preparedness professionals can use.

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Applying Lessons Learned from Caribbean Disasters to Improving Healthcare Resilience to Climate Risk in Miami, Florida

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Summary: Hurricane Maria, a category 4 storm, arrived in Puerto Rico in 2017, knocking out power to the entire island of 3.2 million people. Power remained out in areas for months, taking scores of primary care operations offline, interrupting the pharmacy supply chain, and diverting outpatient care to hospital systems. Initial death tolls were reported as low as 64. Multiple subsequent studies demonstrated deaths downstream of the disaster due to power interruptions in the thousands.

Similarly, Hurricane Dorian, which hit the Bahamas in 2019, stayed over a populated island for more than 24 hours as a category 5 hurricane, causing widespread infrastructure destruction of its primary healthcare system and prolonged power loss. Primary care delivery was further interrupted shortly thereafter by the COVID-19 epidemic, resulting in compounding disaster and increased mortality from chronic conditions, as well as population migration seeking primary health services.

Both hurricanes resulted in large-scale international relief efforts, much of which focused on implementing resilient power infrastructure.

Miami-Dade County sits on the southern tip of the peninsula of subtropical Florida. With a rapidly growing population of 2.7 million people, it is uniquely susceptible to flooding, heat, and hurricanes. Much of the county's population is served by governmentally subsidized health care. An interruption in care in primary healthcare centers due to closures, particularly for vulnerable populations, including patients reliant on power-supplied durable medical equipment, will be deadly.

The University of Miami, who launched long term responses to both hurricanes, is proposing to add solar energy microgrids and batteries to reduce the post-disaster burden on inpatient healthcare systems, and reduce morbidity from chronic illness, as well as reducing carbon emissions for a cost savings overall to the healthcare system, developing the concept of the "medical resilience hub," to offset reliance in disaster on tertiary care centers and relief agencies.

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Strengthening Healthcare Systems for Emergency Preparedness and Resilience

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Summary: On October 7, 2023, Tel Aviv Medical Center - Ichilov faced the immediate aftermath of Israel's largest terror attack, launching us into the Iron Sword War. Amid overwhelming casualties, we activated our unique underground

hospital, swiftly evacuating wards while continuing daily operations. This facility enabled continuous care, including dialysis and long-term treatment, sheltering patients and staff under fire.

Ichilov's extensive real-world experience with modern warfare challenges positioned us to respond to hundreds of helicopter landings and treat more than a thousand casualties, mostly soldiers. Our efforts also extended to the unique operational challenges of caring for hostages who were released later during the conflict, requiring specialized attention and a coordinated approach across multiple medical and mental health disciplines. Through prompt intervention, triage, and expanded ICU capabilities, we saved countless lives. In parallel, we opened extensive rehabilitation services and immediate mental health support for both victims and staff, ensuring a holistic approach to recovery during war.

Our experience highlights the critical importance of preparedness, both through infrastructure and training. Ichilov's readiness stemmed from rigorous planning, continuous drills, and staff familiarization with protected hospital operations. This presentation will explore the operational challenges of maintaining hospital functionality during active conflict, including staff deployment, managing resources, and overcoming the complexities of modern warfare injuries.

The presentation will share practical insights from the field, ranging from rapid evacuation to post-trauma care, reinforcing the need for protected, resilient healthcare systems in the face of security threats. Ichilov's story demonstrates that through constant preparedness, innovation, and an integrated approach, hospitals can remain a lifeline during national crises.

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Oral Reducing Ambulance Dispatches through Using a Multi-interventional Approach – A Prospective Observational Study

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Introduction: The increasing number of ambulance calls and emergency department overcrowding have become a global issue during the past decade. The aging population and increasing morbidity play only a partial role in the increased demand. Ambulance service is often called upon, even when other, more appropriate services would be readily available. This inappropriate utilization of ambulances imposes a significant burden on the emergency health care system. This study aimed to evaluate the effectiveness of various interventions aimed at controlling ambulance dispatch volume and to facilitate the referral of patients to appropriate alternative services.
Methods: This was a prospective, observational cohort study covering all ambulance dispatches in Helsinki, Finland, in 2021- 2024. Interhospital patient transfers were excluded. The main interventions used were 1) providing guidelines and training for home care and nursing homes, 2) conducting public campaigns and increasing media coverage, 3) updating dispatching guidelines, 4) enabling case-based decision making by dispatchers, and 5) allowing dispatchers to refer callers to alternative services. The interventions were introduced between 2021 and 2023. The study plan was approved by Helsinki University Hospital.
Results: The number of ambulance missions (and total number of units dispatched) decreased from 74,197 (86,860) in 2021 to 72,596 (84,377) in 2022 and to 72,480 (83,161) in 2023. During the first nine months of 2024, the dispatch volume was 48,344 (54,543), with a predictive model estimating a total volume of 64,507 (74,013) by the end of the year. From 2021 to the end of 2024, the estimated total reduction is expected to be 13,1% (14,8%).
Conclusion: The use of multiple, simultaneous interventions managed to stop rise in ambulance dispatches, leading to a reduction. This may be the first report of interventions that have managed to reverse the current trend.

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Challenges and Strategic Solutions in Rescuing Victims of the 2023 Kahramanmaraş Earthquake: Is the Enemy Only Tons of Concrete?

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Introduction: On February 6, 2023, two major earthquakes occurred with the epicenter in Kahramanmaraş. The earthquakes severely affected eleven provinces in Türkiye and northern Syria, causing the death of tens of thousands of people and the collapse of hundreds of thousands of buildings. This study aimed to identify the problems encountered by search and rescue teams during the Kahramanmaraş earthquake and to develop strategic solutions to these problems.
Methods: This exploratory-descriptive qualitative study was conducted with eight participants. The participants were selected through the snowball sampling method and were involved in the search and rescue operations during the disaster. Data were collected through in-depth structured interviews and field observations and analyzed using the thematic analysis approach. During the analysis, researchers cross-checked and discussed disagreements until a consensus was reached.
Results: All participants were male, and the mean age was 44.50±7.58 (min= 29, max= 51). The duration of the participants' work in the earthquake zone varied between 4-16 days. The study found that the difficulties encountered during search and rescue operations were grouped into seven themes: safety, chaos and confusion, human resources and management, meeting personal needs, communication, transportation, and emotional strain. It was found that these problems were generally

serious in the first 24 hours, then partially improved and continued to decrease after 72 hours.

Conclusion: Insufficient number of teams due to the large number of collapsed buildings, communication disruptions, and meeting personal needs are the main difficulties encountered during search and rescue operations. It is considered that the use of the experience and techniques of miners in search and rescue under rubble, the extension of incentive activities to increase the number of volunteer search and rescue teams, and the strengthening of the necessary studies for the accreditation of these teams can contribute to the solution of these problems.

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The 2023 Floods in the Emilia-Romagna Region, Italy: A Retrospective Qualitative Investigation into Response Strategies and Criticalities

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Introduction: In May 2023, the Emilia-Romagna Region experienced two unprecedented rainfall episodes, leading to severe flooding and landslides, especially in the Romagna area, its Southernmost part. This study aimed to assess the health response to the May 2023 floods in this area by identifying the main actions undertaken in response to the floods and by highlighting criticalities and lessons learned.

Methods: This study was conducted in the context of a collaboration between CRIMEDIM, the Center for Research and Training in Disaster Medicine, Humanitarian Aid and Global Health, and the Romagna Local Healthcare Authority. To achieve the objective, a retrospective qualitative case study design was chosen, and semi-structured interviews were employed to gather in-depth information on the experiences and perspectives of key informants involved in the flood response.

Results: Interviewees consisted of 25 key informants related to the following fields: authorities and public administration, health management, public health, primary care, social services, hospital and emergency care system, communication, and the third sector. The findings highlight the strain on the local health system, including service and infrastructure disruptions. The response strategies have been analyzed and clustered in phases (alert and activation, coordination, communication, identification of vulnerable individuals, evacuation management, surge capacity, health service delivery, logistics, and the role of volunteers), offering a comprehensive overview of local disaster response strategies. Recommendations include enhancing the interoperability of health information systems for disaster management, improving the coordination of evacuations for at-risk populations, improving the capacity to map fragile and vulnerable populations, and strengthening spontaneous volunteers.

Conclusion: This study highlights the importance of collaborations between local health authorities and academia for ongoing evaluations to enhance disaster response and resilience.

Full authorship: Valente Martina, Del Prete Clara, Facci Giulia, Martino Ardigò, Grilli Roberto Giuseppe, Bravi Francesca, Reno Chiara, Ragazzoni Luca

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Alternate Care Facilities: A Qualitative Study of the Successes and Challenges of Implementation in the United States using Semi Structured Interviews with Subject Matter Experts

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Introduction: To date, despite the COVID-19 pandemic that led to the establishment of alternate care facilities (ACFs) in many regions throughout the United States (US), limited literature exists exploring the strengths of current US federal ACF guidelines and challenges with implementing these guidelines. Intuitively, the ability to expand hospital bed surge with ACFs is cardinal to responding to certain mass-casualty incidents and public health emergencies.

Methods: A systematic review of existing literature was conducted, focusing on experiences with implementing ACFs in the US. Based on themes identified from the literature review, semi-structured interviews were conducted with ACF subject matter experts (SMEs). Transcripts from these interviews were qualitatively analyzed to identify common themes, focusing on successes, challenges, and the future direction of AFCs.

Results: The comprehensive literature review identified 34 articles, representing 14 states and 16 ACFs. Articles addressed various topics involved in ACF implementation, describing leadership and coordination, staffing modes, satellite pharmacy onboarding, resource allocation, patient selection, challenges, and successes. 17 ACF SMEs were interviewed, representing 13 states and a variety of institutions, including community-based, academic, Red Cross, and federal partners. Key themes were identified for ACF implementation with sub-themes pertaining to successes, challenges, and the future of ACFs. Flexibility and adaptability, partnerships and collaborations, resource procurement and allocation, and leadership and stakeholder engagement were themes identified in all sub-theme areas. Key recommendations from SMEs include the development of a coherent strategic vision for each ACF, enhanced

community engagement, ensuring early effective leadership, providing training and support, and enhancing coordination among outside partners.
Conclusion: ACFs are a viable option for addressing medical surges during healthcare crises. Preplanning through local and regional partnerships, collaboration with local healthcare systems, and flexible staffing models are key for an effective activation. The proposed experiential-based best practices complement current ACF guidelines.

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Exercising a Virtual Assessment Model for At-Home Evaluation of Suspected High-Consequence Infectious Disease Cases

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Introduction: The Sudanvirus Disease outbreak in 2022 prompted our High-Risk Infection Team (HITeam) to evaluate and implement novel response strategies. To improve the flexibility and efficiency of special pathogens response, HITeam members developed a Virtual Assessment Model (VAM) for at-home evaluation of individuals suspected of having high-consequence infectious diseases (HCID).
Methods: The VAM incorporates aspects of care, normally rendered in a high-level isolation unit (HLIU), into a mobile response framework where special pathogens clinicians are brought into an individual's home. To address real-life VAM feasibility, a comprehensive residential functional exercise was executed. External evaluators were invited to assess the model.
Results: The VAM allows for thorough assessment of a suspect case in the field and postponement of full HLIU activation until more information is available. Developing, testing, and implementing the VAM required input from an interdisciplinary group of partners, culminating in a functional exercise that demonstrated the ability of nurses, physicians, laboratorians, paramedics, and public health personnel to integrate into one cohesive care team. Even though participants in the exercise followed the model as described, feedback from participants and observers led to an alteration in the timing of the virtual visit to minimize the time of the on-site team inside a suspect case's residence. Virtually obtaining history and performing preliminary environmental scan while the on-site team is preparing to deploy would optimize the on-site team's workflow to focus on clinical assessment, sample collection, and delivery of care-package consisting of patient friendly information materials, thermometer, sphygmomanometer, and pulse-oximeter, which was identified as a must-do during the functional exercise.
Conclusion: The VAM has long-term sustainability implications for global special pathogens programs and provides solutions for broader challenges in healthcare by role-modeling cost-effective, patient-centered care within the highly nuanced HCID care. Optimizing the model via exercises is key for its seamless real-life implementation.

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The Impact of Disasters on Mental Health Medication for People with Dementia

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Introduction: Climate change is associated with increasing frequency and severity of extreme weather events, but little is known about the impact of disaster exposure on people living with dementia (PLWD). PLWD may experience increased confusion, disorientation, anxiety, and paranoia during disasters, potentially leading to the inappropriate use of psychotropic medications as a form of symptom management. This study examined new psychotropic prescription medications or changes to existing prescriptions among US Medicare beneficiaries with a dementia diagnosis following hurricane exposure.
Methods: This study used a retrospective cohort design with administrative claims data from Medicare beneficiaries diagnosed with dementia. The study population included 71,401 beneficiaries residing in counties exposed to Hurricanes Harvey, Irma, or Florence between 2017 and 2018. Exposure to major hurricanes (Harvey, Irma, and Florence) was determined based on Federal Emergency Management Agency disaster declarations for affected counties. The primary outcome was the rate of new psychotropic prescriptions or changes to existing prescriptions within 12 months post-hurricane exposure, compared between beneficiaries in exposed versus unexposed counties.
Results: PLWD exposed to hurricanes had a 10% higher rate of starting new antipsychotic prescriptions compared to those in unexposed counties (Incidence Rate Ratio [IRR]: 1.10; 95% CI, 1.04-1.17). Exposure to Hurricane Harvey was associated with a 20% higher rate of new antipsychotic prescriptions (IRR: 1.20; 95% CI, 1.07-1.36), while no significant changes were observed following Hurricanes Irma (IRR: 0.99; 95% CI, 0.90-1.08) or Florence (IRR: 0.92; 95% CI, 0.80-1.05).
Conclusion: Exposure to Hurricane Harvey was associated with increased rates of new antipsychotic prescriptions among PLWD, suggesting that tailored disaster preparedness and response strategies are needed to address the unique needs of this vulnerable population. Understanding patterns in psychotropic medication prescribing among PLWD before, during, and after disasters is essential to improving disaster readiness and reducing inappropriate medication use.

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Secondary Casualty Evacuation on October 7, 2023

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Summary: On October 7, 2023, Israel experienced an unprecedentedly severe terrorist attack, resulting in more than 1,200 fatalities, 1,455 injuries, and 239 hostages. The scale of the attacks on civilians placed an immense strain on hospitals, particularly in the south. This necessitated a significant shift in hospital operations, including the activation of Mass Casualty Event (MCE) protocols. Soroka and Barzilai hospitals were forced to transition to a MEGA MCE mode, dramatically altering the operation of their emergency departments, trauma units, operating rooms, and internal medicine wards. Due to the overwhelming number of casualties and the significant strain on southern hospitals, secondary evacuation operations were conducted for the first time since the Yom Kippur War (1973). Hundreds of casualties were transferred from overwhelmed southern hospitals to those in the central and northern regions of the country.

This massive operation involved the coordinated efforts of the Home Front Command, the Ministry of Health, and hospitals across the nation, all operating in emergency mode. The success of these rapid and effective actions can be attributed to ongoing training, exercises, and cooperation spearheaded by the Hospital Preparedness Branch. This multi-year readiness program, involving 28 hospitals, included comprehensive emergency room training, tabletop drills and simulations for hospital headquarters, and large-scale drills. The annual training program encompassed MEGA, SURPRISE, SAMPLE, and MTE drills, ensuring all hospitals were prepared for large-scale emergencies. This presentation aims to share the lessons learned from both hospital-level and national-level evaluations regarding hospital preparedness for MCES. It will also provide insights derived from the secondary evacuation processes, which involved transferring hundreds of casualties daily, using Magen David Adom ambulances and helicopter evacuation rounds by the Israeli Defense Forces (IDF).

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Hospital on the Home-Front: Building Functional Continuity and Resilience at a Civilian Hospital During Wartime

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Summary: During wartime, Israeli hospitals face significant security challenges, requiring rapid shifts from routine operations to various states of emergency. Even in peacetime, hospitals maintain high levels of preparedness, regularly practicing their response to extreme events. However, since the outbreak of the Iron Swords War, hospitals have been on heightened alert, employing comprehensive strategies to address emerging threats. Those situated within conflict zones are crucial in delivering immediate medical care to the injured while managing risks such as missile attacks, bombings, and other security threats.

As a hospital outside the front-line zone, this presentation outlines our preparation and response strategies to address war-related threats such as rocket attacks and UAV incursions, support front-line hospitals by admitting transferred patients, and mitigate potential damages while saving lives. These efforts are carried out alongside continuous preparedness for and management of mass-casualty incidents (MCIs).

The preparation plan involves a multi-dimensional response strategy, including:

1. Maximizing protected areas within the hospital
2. Increasing stocks of equipment and essential medications
3. Ensuring operational continuity in case of national system failures
4. Addressing human resource challenges by training staff and maintaining resilience
5. Sustaining a constant state of readiness and alert
6. Collaborating with external rescue authorities and supporting hospitals in conflict zones Balancing emergency response with the need to maintain routine operations over an extended period of high alert

A robust contingency plan and preparedness for wartime scenarios are essential to ensure resilience, operational continuity, and an effective response to emerging needs. These efforts are critical to saving lives and supporting both routine and emergency medical operations.

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Role of General Practitioners in the Management of Disasters in Nepal

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Introduction: Nepal is highly susceptible to natural disasters, including earthquakes, floods, and landslides, which have been exacerbated by climate change. General Practitioners (GPs) are often the first point of contact in affected communities, playing a crucial role in managing the health consequences of such calamities. This study explores the role of GPs in disaster management in Nepal, with a particular focus on preparedness, response, and recovery phases.
Methods: A review of current literature, policy documents, and field data was conducted to assess GPs' roles, knowledge of disaster medicine, and the skills required for effective disaster response. Additionally, a gap analysis was performed to evaluate current skills and the specific needs of GPs in disaster situations. The study was undertaken in partnership with Saving Lives International – a UK charity.
Results: The findings highlight that Nepal GPs have been trained in triaging injuries, providing essential primary care,

and delivering essential mental health support in post-disaster settings. However, gaps were identified in areas such as quality and outcomes assessments, disaster medicine preparedness training, emergency response coordination, field medicine, pre-hospital trauma care, and impact on mental health. It underscores the importance of integrating GPs into disaster management frameworks in Nepal, emphasizing the collaboration with government agencies, non-governmental organizations (NGOs), and community leaders. Training in disaster medicine and response protocols, as well as fostering community resilience, were identified as key areas of improvement.

Conclusion: Enhancing GPs' involvement in disaster management through structured training programs and resource allocation can improve healthcare outcomes in vulnerable communities, particularly during the recovery phase. Leveraging the local knowledge and established relationships, GPs can enhance the overall efficacy of disaster response efforts. The study calls for strategic investment in GP disaster preparedness to build a more resilient healthcare system capable of responding to the escalating threat of natural disasters in Nepal.

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Surgical Surge Capacity of Operating Rooms and Resultant Delay to Treatment during Mass Casualty Incidents: A Queue Management Model

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Introduction: This study aimed to develop a useful model for calculating the surgical surge capacity and consequent delays in delivering care during mass casualty incidents (MCIs).

Methods: A queue management model was developed using operational research tools, and a computer code was written for that end. The waiting times were calculated according to the number of existing operating rooms (ORs), surgical time estimations, and expected OR availability (days/nights/weekends).

Results: A facility with 30 ORs, of which 25 are occupied at an MCI onset, will experience a 4.1-minute delay with every additional patient, once all rooms are operating, when the ordinary mean surgical time is 120 minutes for non urgent cases and 150 minutes for emergency surgeries. This translates into the mean added time for each additional patient, such that casualty #14 will wait ~60 minutes and casualty #27 will wait ~120 minutes. For an MCI occurring when there are only two busy ORs (e.g., nights or weekends), every patient added to the queue will lengthen the postponement by ~5 minutes. A facility with 20 ORs, of which 15 are occupied at an MCI onset, will experience a 6.3-minute delay with every additional patient, once all rooms are operating, when the ordinary mean surgical time is 120 minutes for non-urgent cases and 150 minutes for emergency surgeries. This is the mean added time for each additional patient – casualty #9 will wait ~60 minutes, and casualty #18 will wait ~120 minutes. If the MCI started with only two working ORs, every patient would add ~7.5 minutes to the queue once it has formed.

Conclusion: The queue management model is based upon the overall number of ORs, the timing of the MCI, and the operating time estimations. This easy-to-calculate model predicts delays to surgery and assists in critical operational decision-making.

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Pediatric Surge: Strategies and Tools for Capacity Building

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Summary: Children around the world are vulnerable to disasters irrespective of the local abundance or scarcity of health resources. Often, children are overlooked in healthcare systems primarily focused on adults. Creating pediatric specific strategies that are adaptable to different geographies is essential to support children, especially during surge incidents. The United States government has recently supported the initiatives, the Administration for Strategic Preparedness and Response (ASPR) Pediatric Disaster Center for Excellence (PDCOE), and the Health Resources and Services Administration (HRSA) Pediatric Pandemic Network (PPN), to improve pediatric care throughout the disaster cycle in the US healthcare system. These initiatives have created partnerships with state, regional, and local entities to promote pediatric disaster response by all healthcare systems and their communities, regardless of local pediatric resources.

The PDCOE, Region 5 for Kids, created a pediatric hazard vulnerability analysis (HVA) toolkit that focuses on pediatric vulnerabilities in all disasters, a regional metrics scorecard to assist regions in understanding their pediatric strengths and gaps, and uses weekly regional hospital metrics to assist with surge mitigation. The PDCOE, Western Regional Alliance for Pediatric Emergency Management (WRAP-EM) created a Surge Toolkit as a just-in-time aid for a respiratory surge. The PPN created the Pediatric Surge All Hospital Handbook (PedSAHH), addressing community-wide needs to integrate pediatric surge planning in all hospitals. WRAPM-EM also created the "15 'til 50 Pediatric Mass Casualty Incident Plan Template". These tools give critical recommendations for planning and just-in-time management of a surge of pediatric patients after a disaster or during a pandemic. While these pediatric surge support tools have been evaluated in a well-resourced country, the strategies described are applicable

and adaptable to all communities, regions, and countries. The recommendations can be implemented with local surge practices to ensure that children receive optimal care within the entire disaster cycle.

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Utilization of the Public Health System Resilience Scorecard: Qualitative Account from Workshops in Türkiye

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Introduction: The complexity of society can cause cascading events during disasters. To minimise this effect, a multisectoral approach is essential. The Public Health System Resilience Scorecard, developed by a group of partners including the UNDRR and WHO, was utilized to highlight those challenges in prior studies. The Scorecard workshops were organized in two earthquake-affected provinces in 2023. While the Scorecard helps to evaluate the public healthcare system through a consultative and collective approach, the experience of individual participants remains unknown.

Methods: This study employed a qualitative approach to capture the workshop participants' understanding and experience in utilizing the scorecard. The workshop participants were interviewed before and post the workshop. A semi structured interview guideline was utilized. The data was transcribed in Turkish, then translated into English.

Researchers analyzed the outputs using qualitative software; validation of data was carried out. To capture an overview, keywords such as disaster scenario/plan, preparedness of vulnerable population were counted to better understand and explain the findings from the data.

Results: From the interview of 12 participants, seven themes emerged: Enhancing structural disaster resilience; Increasing disaster governance with multisectoral collaboration; Community resilience to disasters; Disaster resilience in relation to public health services; Understanding of the meaning of disaster resilience; Needs of taking actions against disasters; Scorecard utilization experience and meaning. When comparing the pre- and post-workshop responses, the words mentioned more frequently by the participants were increasing mental health service capacity, preparing vulnerable populations for disasters, and creating backup energy sources.

Conclusion: This study investigated the participants' experience in utilizing the Scorecard. Qualitative data indicated that utilization of the Scorecard is not limited to measuring elements of a resilient public healthcare system but also provides opportunities for the participants to reflect on their experience and articulate the actions to be taken, especially in the post-disaster phase.

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Development and Update of Hospital Disaster Preparedness and Response Plan of 25 Hub Hospitals of Nepal – Process Documentation

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Summary: Hospital disaster preparation involves creating systems and processes to enhance a hospital's readiness for emergencies. The first step in crisis management is having a disaster management strategy, mandated by international agreements like the Sendai Framework. The 2015 Nepal earthquake highlighted hospitals' capacity concerns, leading to the inclusion of hub and satellite hospitals in disaster plans. Later, infectious disease management and lessons from COVID-19 were incorporated. The disaster plans for Nepal's 25 hub hospitals, collaborating with the Health Emergency Operation Center (HEOC) and the Provincial Health Emergency Center (PHEOC), were updated. Workshops aimed to empower participants to own the hospital plans. The Hospital Disaster Preparedness and Response Plan (HDPRP) addresses preparedness, response, and recovery, including COVID-19 management. Developed through testing, the HDPRP, along with workshops and engagement strategies, bolsters hospitals' disaster response capabilities.

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Enhancing Disaster Preparedness: Long-Term Coordination Strategies between Military and Civilian Medical Forces in War-Torn Regions

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Introduction: The October 7, 2023, Hamas attack on Israel resulted in hundreds of fatalities, abductions, and hospitalizations, marking the beginning of the ongoing war. This mass casualty incident (MCI) overwhelmed the medical system and demanded unprecedented civil-military coordination in response to ongoing terrorist assaults. The World Health Organization's Civil-Military Coordination (CIV-MIL) framework underscores the necessity of collaboration in emergency response, particularly in conflict zones. This study examines sustainable strategies for integrating military and civilian medical capabilities to improve disaster preparedness and response in war-affected areas, using the Israeli experience to inform a model applicable to similar global high-risk scenarios.
Methods: The documented files of the medical cooperation plans between the Israel Defense Forces Medical Corps and three hospitals for use in a possible escalation of hostilities, written from 2020 onward, were reviewed. All documents were compared, and points of incompatibility or inaccuracy in coordination between the entities were identified. The results were presented to twelve senior officials in the IDF Medical Corps and the Israeli Health System through semi-structured interviews to obtain their opinions through open interviews regarding the strategy required to enhance disaster preparedness.
Results: Document analysis revealed four critical coordination gaps: hospitals lack awareness of available military medical resources, army medical records remain undigitized, large-scale mass casualty drills are infrequent, and helicopter transport for the injured is improvised on an ad hoc basis. Interviews highlighted three predominant themes: inadequate exercise budgets, independent organizational planning that wastes resources and hinders preparedness, and staff turnover impacting emergency preparedness.
Conclusion: This study is crucial as it highlights one of the most significant aspects of emergency response: the importance of routine long-term coordination and planning. In any context where there is cooperation between military and civilian entities, it is essential to consider the results of this study as the foundation for a work plan.

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REM, CRSEM, NORIA and TrackMi Montérégie: Long-Term Disaster Planning Initiatives in the Montérégie Area (Quebec, Canada)

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Summary: As part of its responsibilities for the "Health Mission" in Montérégie (1.5 million inhabitants, 11 000km^2), CISSS de la Montérégie-Centre adopted a Code Orange strategy and initiated the REM project in January 2022. In collaboration with regional partners, REM is a continuous improvement project aimed at analyzing major events and their impact on hospitals, as well as identifying performance indicators and optimizing time-dependent patient trajectories during multi-casualty incidents (MCI).

REM project led to the creation of the Regional Committee for the Simulation of Major Events in Montérégie (CRSEM) and the implementation of the NORIA Regional Simulation Program. In the Fall 2023, the CRSEM carried out two simulation exercises: NORIA1 (table-top) and NORIA2 (functional). The NORIA2 activity simulated exchanges between various regional partners (911 call center, police, fire department, ambulance services, regional coordination, hospitals) during a fictitious bus accident and demonstrated the added value of a real-time digital casualty traceability tool.

To ensure optimal use of a digital MCI tool, it is important to train paramedic teams in its use during routine activities. As a result, in partnership with an EMT technology firm, CISSS de la Montérégie-Centre established the TrackMi Montérégie project (2024). An existing mobile tool designed for the rapid exchange of MCI information was modified to also collect routine prehospital data to optimize clinical trajectories and hospital fluidity. The application supports geolocation of patients en route to the hospital and a secure web-based platform for real-time data analysis.

Optimal hospital management depends on its alignment with pre-hospital resources and the timely transfer of validated information. Technology has the potential to improve patient tracking, communications, coordination, and incident management. Simulation exercises foster communication and collaboration among different organizations. Together, the above-mentioned initiatives in the Montérégie area have improved disaster preparedness and, as a result, the resilience of responders and communities.

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Safe Hospital Tools Diversity in ASEAN: A Scoping Review

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Introduction: The Safe Hospital concept, integrated into the 2015 Sendai Framework for Disaster Risk Reduction, enhances healthcare resilience globally. The increasing frequency and intensity of hazards due to natural or non-natural incidents highlight the need for safe hospital tools to ensure preparedness, resilience, and response in times of crisis. This study aims to explore the tools used to evaluate the level of hospital preparedness in ASEAN regions.
Methods: The scoping review protocol was based on the criteria of the Joanna Briggs Institute. Eligibility criteria were as follows: (1) empirical study published in a peer-reviewed journal;

(2) used tools to assess, study, or measure the level of hospital preparedness in ASEAN; (3) data collected in the hospital setting in ASEAN member states; and (4) studies published in English. The electronic literature searches of English articles enlisting ASEAN countries published between 2018 and 2024 were conducted using PubMed, Elsevier, ProQuest, ISI Web of Science, and Google Scholar databases. The keywords of sub-title searching were "hospital", "disaster", "emergency", "hospital preparedness", "hospital readiness", "hospital assessment", "hospital evaluation", "tools", "checklist", "health facility", and "medical facility" in combination with the Boolean operators "OR" and "AND."

Results: 16 articles from 17,800 publications were included in the final analysis. Findings showed some safe hospital evaluation tools with a diverse range of approaches. Some countries adopt the WHO Hospital Safety Index, have customized tools to address unique regional vulnerabilities, while others do not appear in the search engine. The result indicated the challenge of applying evaluation standards among countries and the incorporation into national health policies.

Conclusion: This review offers insights into the diverse safe hospital tools in ASEAN, providing a basis for the harmonization of disaster health management in hospital practices.

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Community Emergency Response Teams in Israel after October 7, 2023

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Summary: On October 7, 2023, over 6,000 Hamas terrorists from Gaza invaded border communities in Israel, killing more than 1,200 people, mostly civilians, and injuring 1,455. In addition, 239 Israelis and foreign nationals were taken hostage, resulting in the country's largest mass casualty event (MCE). Magen David Adom (MDA), Israel's National Emergency Pre-Hospital Medical and Organization, began establishing Community Emergency Response Teams (CERT) based on the concept developed by the Federal Emergency Management Agency (FEMA) in the United States. The teams, all volunteers, consist of physicians, nurses, paramedics, and EMTs who focus on primary care for victims, especially in situations where immediate evacuation is not possible or when resources are limited. The volunteers are vetted and registered by MDA. Following recruitment, the volunteers undergo comprehensive training, including prehospital trauma life support, search and rescue medicine, and MCE management. In addition to the technical training, emphasis is placed on developing teamwork skills and cooperation with other emergency agencies, including the fire department and the police. Particular emphasis is placed on scenarios simulating complex "desert-island" emergencies, in which it is necessary to treat the victims for a prolonged period until they can be evacuated. The teams are trained to work in three different areas: the disaster site, the treatment station, and the observation station.

So far, 11,441 volunteers have been recruited to cover 593 community teams throughout Israel. Of the volunteers, 1,890 received equipment for basic first aid, 6,419 received equipment for basic life support, and 719 received equipment for advanced life support. In addition, 10,000 on-call volunteer first responders have already registered with MDA.

Some of the model's challenges include hazardous working conditions, limited resources, and communication issues from damage to existing infrastructure. Advantages of the community model include high availability, rapid response, and local knowledge.

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Emergency and Disaster Preparedness for Healthcare Professionals in Singapore's Emergency Department: A Two-Pronged Approach through Training and Simulation — Field Report

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Summary: Healthcare professionals in Emergency Departments (EDs) must be prepared to handle mass casualty incidents (MCIs) that can strain resources and impact care quality. Despite Singapore's low risk of natural disasters, its vulnerability to incidents like plane crashes and terrorist attacks necessitates comprehensive disaster planning. This includes readiness for CBRNE threats and HAZMAT decontamination. During civil emergencies, public hospitals in Singapore mobilize resources like Field Medical Teams (FMT), civil emergency (CE) personnel, and HAZMAT decontamination stations (HDS). Sengkang General Hospital (SKH) ED employs a two-pronged approach of lectures and simulations for training. About 50 ED healthcare professionals participated in a program organized into three groups: FMT, CE, and HDS. In the lectures, participants gained knowledge about civil emergencies, workflows, and their specific roles during MCI activation. This was complemented by simulations conducted every two weeks. FMT simulation focuses on efficiently deploying support teams from the hospital to incident sites. CE participants utilize building blocks for a tabletop exercise to visualize the department's layout and processes during MCI activation. HDS participants train to don hazmat suits quickly and set up a decontamination area. SKH ED also conducted a full-dress rehearsal simulating a massive MCI activation involving all participants. The two-pronged approach enhances understanding and interactive learning through safe simulations, thereby boosting emergency preparedness. As a relatively new hospital, SKH ED greatly benefits from these simulations. However, training is limited by time constraints and the specific qualifications required for different roles, such as an Advanced Diploma in Emergency Medicine or

HAZMAT certification. There is also a need to enhance training for managing pediatric casualties, as most public hospitals primarily serve adults. While disasters are rare in Singapore, the potential severity of such incidents highlights the importance of well trained staff in the ED. Therefore, prioritizing training for ED staff in emergency and disaster preparedness is essential for effective management.

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Assessment Tools for School Disaster Resilience: An Integrative Review

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Introduction: School disaster resilience is crucial for community safety, serving as educational centers and emergency shelters in disaster-prone areas. Resilient schools ensure student safety and educational continuity, while assessment tools are vital for evaluating readiness, identifying vulnerabilities, and guiding mitigation strategies. However, many existing tools lack local relevance and comprehensiveness, limiting their effectiveness. Developing appropriate tools is essential for enhancing school disaster resilience effectively. This review aimed to identify, evaluate, and synthesize existing assessment tools for measuring school disaster resilience.
Methods: This review evaluated school disaster resilience assessment tools from 2015 to 2024, focusing on quantitative studies in English. Relevant studies were selected using databases such as PubMed, ScienceDirect, CINAHL, and Google Scholar with keywords "school", "disaster", "resilience", and "education". Extracted data included tool types, methodologies, key components, and outcomes, with quality appraised using CASP and JBI checklists to ensure methodological rigor.
Results: From the 395 initial search articles, eight were identified that met the inclusion criteria. The findings synthesized two main categories of existing assessment tools. First, school disaster resilience tools generally focus on structural, non-structural, and functional aspects. Second, psychosocial resilience was critical but underrepresented, with only a few tools assessing psychological preparedness and support mechanisms for students and teachers. Despite addressing essential dimensions, the tools often lacked adaptability to regional specifics, limiting their effectiveness in diverse socio-economic and geographic contexts.
Conclusion: Existing assessment tools contribute to school disaster resilience by identifying key vulnerabilities, but lack adaptability to diverse local contexts. Findings highlight the need for robust, context-specific tools that encompass both physical and human resilience in disaster-prone areas. Future tool development should incorporate regional flexibility to enhance school resilience, supporting uninterrupted education and community safety during crises.

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30 Years Since the Great Hanshin-Awaji Earthquake: Where Is Hyogo Prefecture's Disaster Medical System Now?

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Introduction: Eight years after the Great Hanshin-Awaji Earthquake of 1995, Hyogo Prefecture established the Hyogo Emergency Medical Center(HEMC) with the Hyogo Prefectural Emergency Medical Operations Center, which serves as a leading facility for disaster and emergency medical care. We would like to take a look at the current state of Hyogo Prefecture's disaster medical care system in 2025, 30 years after the Great Hanshin-Awaji Earthquake.
Methods: We will check the official records to confirm the role played by the HEMC, which is the prefecture's record and core facility.
Results: In Hyogo prefecture, at present, 20 disaster base hospitals have been designated in 10 disaster medical regions. The disaster medical system is operated around two councils: the Hyogo Prefecture Disaster and Emergency Medical System Management Council and the Hyogo Prefecture Disaster Base Hospital Liaison Council. At present, both of these councils have their secretariats at the HEMC, and they are working not only on medical care but also on strengthening cooperation with health, welfare, and other related organizations. In fiscal 2023, they are working to strengthen the exercise system centered on the Exercise Planning and Management Subcommittee established in the Liaison Council of Disaster Base Hospitals, etc., and are working to build a business continuity management system (BCMS). This subcommittee and local health and medical authorities have begun to assess the earthquake resistance of individual hospitals' inpatient facilities, the risk of power loss and countermeasures, and the status of water use and countermeasures for water outages, and are working to compile a list of these vulnerabilities in normal times.
Conclusion: Starting with the establishment of each disaster base hospital BCP, they are now working towards the development of BCMS at the regional and community level in the fields of health, medical care, and welfare.

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Impact of Natural Disasters on Mobile and Fixed Cellular Telecommunication Network Performance: How Low Can You Go?

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Introduction: Uninterrupted access to medical communications during disasters is necessary to optimize disaster preparedness, response, and patient outcomes. Robust, data-driven approaches to understand telecommunication network performance during and after disasters are necessary. The objective of this pilot study was to identify patterns in network disruption during natural disasters to enable characterization of performance and inform standards.
Methods: Network performance data from multiple mobile and fixed cellular network carriers, provided by Ookla For Good, was analyzed to characterize performance during three major disasters: Hurricane Michael, Panama City, Florida (October 10, 2018), Hurricane Ian, Fort Myers, Florida (September 28, 2022) and Puerto Rico earthquakes (December 28, 2019 – January 11, 2020). Time series analysis and geospatial analysis were conducted on the available network performance data for these regions before, during, and after the disasters to identify patterns of change in network latency and download and upload speeds.
Results: Despite substantial gaps in data (missing, uneven, and time-restricted datasets), distinct patterns of impact and recovery of network performance were identified. Panama City experienced the most severe disruptions, with significant declines in download and upload speeds and prolonged latency across both mobile and fixed-line networks. Fort Myers showed a similar trend, with marked drops in network performance following Hurricane Ian, although most providers demonstrated a strong recovery over time. In contrast, Puerto Rico was less affected by the earthquake, exhibiting minimal volatility in network performance.
Conclusion: This analysis identified varying degrees of network resilience across different locations, carriers, and disasters. Additional data could permit the development of an intelligent model that is capable of predicting network performance during disasters. Understanding how hurricanes and earthquakes impact telecommunications infrastructure can inform stakeholders about expected network conditions, guide the development of resilient systems, and be used to set minimum standards that ensure continuity of medical communications during natural disasters.

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Off-the-shelf Video-Conferencing Platforms: Is Your Favorite Tech Adequate for Disaster Response?

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Introduction: Healthcare organizations used off-the-shelf video conferencing platforms to provide telehealth services during the SARS-CoV-2 pandemic. However, the reliability and resiliency of these platforms for all-hazards disaster response when the telecommunication infrastructure may be damaged or overwhelmed is unknown. Further, industry standards to guide technology and system development for disaster response are lacking. This study characterized the impact of degraded networks on the ability to maintain adequate audio and video quality to support clinical telehealth encounters in simulated austere network conditions.
Methods: Network manipulation testing was performed in a cyber-sandbox for HIT on off-the-shelf video-conferencing platforms (Zoom, Microsoft Teams, Webex, Skype, and Google Meet) and two commercial telehealth platforms in development for regional disaster response in the United States. A high-precision network emulator was used to perform controlled network degradation, including network bandwidth, network delay, packet loss, and packet corruption. Delays in establishing synchronous video calls, video resolution, missing video frames, video freezes, delayed video, audio quality, delayed audio, and audio intelligibility were examined, as these issues can compromise the quality of the telehealth encounter.
Results: Decreasing the network quality of service decreased audio and video quality. With all platforms tested, when network bandwidth was <200 KB/s, network delay was >5 seconds, packet loss exceeded 15%, or packet corruption exceeded 20%, communication via audio and video conference failed.
Conclusion: This study identified minimum network performance thresholds required to use video conferencing and telehealth platforms to deliver disaster telehealth services in simulated settings. These results inform system users and technology developers of methods, metrics, and expected performance to prepare for real-world performance degradation expected in disasters. Future studies should examine real-world network performance in a variety of disaster conditions.

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Healthcare Downtime Readiness Pre and Post CrowdStrike

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Introduction: Growing dependence on digital systems for operations increases the risks for healthcare during downtime events. Cyberattacks typically result in hospitals needing to use downtime procedures for multiple weeks, severely compromising patient safety and care. The 2024 Crowdstrike global failure event provided an opportunity to assess the adequacy of current downtime training and procedures.

Methods: Our hospital system administered two surveys: one before the CrowdStrike failure as part of efforts to establish priorities to improve hospital downtime readiness and the other as part of the evaluation process after the CrowdStrike outage. Both surveys included multiple-choice and open-ended questions. The downtime readiness survey was administered in December 2023 and included 64 questions. The post-outage survey had 27 questions and was administered in July 2024.
Results: The vulnerabilities identified in the 2023 survey were highly predictive of the primary issues reported in the post outage survey. The downtime readiness survey showed that all departments had downtime plans, but only 77% had tested them. The post-outage survey documented major challenges in paper charting, handoffs without digital systems, and reconciliation of data during recovery, as well as difficulties with rapidly transitioning to downtime procedures as the event began. Only 78% of departments had printed copies of necessary downtime forms on hand at the beginning of the event, and 48% had enough to operate for more than 2 days. Only 44% and 33% of departments reported having a backup for departmental and interdepartmental communication, respectively, during downtime. Positively, 79% of respondents felt they had access to sufficient information during the event.
Conclusion: Our surveys describe priority areas of focus in the development of standardized policies, staff training, specialized response resources, and communication tools to improve digital downtime preparedness and response. Further work is needed to identify barriers to the adoption of recommended potential solutions.

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The Need for Mass Gathering Regulation in Portugal - Priorities and Challenges

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Summary: Mass gatherings, which can be defined as events exceeding 1,000 participants in a specific location for a defined purpose and duration, pose heightened public health risks. These risks stem from high participant density, increased interpersonal contact, and the presence of attendees from diverse regions. Temporary accommodations and food services contribute to the risk of disease transmission, while alcohol and other drug consumption can lead to risk behaviors. Given Portugal's suitability for such events due to climate, tourism, and cultural factors, establishing a technical norm is crucial to ensure safety and preparedness.

The draft technical norm emphasizes the need for a formal registration, mandating the designation of a health focal point by event organizers. Events can be classified into risk levels (low, medium, high, extreme) based on type, participant numbers, duration, and proximity to medical facilities. The classification determines the required health resources and response measures. For low-risk events, basic life support teams and defibrillators are necessary, while high- and extreme-risk events require advanced life support and medical centers, with pre approval timelines ranging from 15 to 120 days.

Key health provisions should include pre-event planning, epidemiological surveillance, health promotion, and harm reduction strategies. Contingency plans should address food and water safety, environmental concerns, emergency exits, crowd control, and crisis scenarios. Surveillance systems must ensure data collection and daily reporting to health authorities, facilitating coordinated responses. Special considerations include managing high risk factors, such as rival groups or substance use, and providing health services (including access to water and sun protection, for instance) during long wait times or setup phases.

This norm proposal integrates health system readiness with real-time monitoring and cross-agency collaboration, underscoring the importance of comprehensive planning to mitigate health risks while supporting the success and safety of mass gatherings.

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Re-Imagining the Future to Address Overlapping Infectious Disease Outbreaks and Weather-Related Disasters

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Introduction: Climate change is expected to increase the frequency of infectious disease outbreaks and weather-related disasters. However, agencies are often separated in institutional focus, either on infectious diseases or disaster management, but not both, which limits capacity to respond when they happen together. This project aimed to explore how to prepare for and respond to overlapping infectious disease outbreaks and weather-related disasters in the state of Victoria, Australia.
Methods: Qualitative interviews were conducted with 20 stakeholders in infectious diseases and/or emergency management, including researchers, government workers, practitioners, and citizen scientists. Interviews focused on each stakeholder's imagined worst case, best case, and most likely case for how disasters and infectious disease outbreaks could overlap in the next 5 years. Interviews were thematically analyzed using strategic foresight methods to create future scenarios. Strategic foresight methods seek to give readers a 'memory of the future' to act upon in the present. Participatory workshops were held with government agencies to examine the scenarios against existing policies and practices.
Results: Three future scenarios were created, including overlaps in disasters and infectious disease outbreaks that were coincidental (High Pathogen Avian Influenza outbreak and extreme flooding co-occur), cascading (bushfires lead to animal movement and an outbreak of Tularaemia occurs) and compounding

(extreme heatwave and Hendra virus outbreak exacerbate each other and become harder to manage). Workshops examined pathways for managing these overlaps, identified barriers and facilitators for organizational change, and highlighted the importance of cross-agency collaboration.

Conclusion: It is imperative to address the complexity of overlapping infectious disease outbreaks and disasters. This study underscores the importance of considering multiple hazards in scenario planning and capacity building and illustrates ways of working with different stakeholder groups to plan for the future. The present findings further highlight the possibility for creative governance among agencies facing uncertainty and complex risks.

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The Australasian Women in Emergencies Network: A Catalyst for Gender Equity and Resilience in Emergency Management and Disaster Resilience

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Summary: The establishment of the Australasian Women in Emergencies Network (AWE) underscores the importance of a volunteer-led initiative that prioritizes diversity, equity, and resilience in the emergency management and disaster response sector. Recognizing the need for greater inclusion of women in the emergency management and disaster resilience sector, AWE was established in Australia in 2018, quickly expanding to include New Zealand and, more recently, the Pacific. With overarching goals to promote, support, and recognise the contributions of women, AWE provides a platform for networking, promoting, information sharing, and collaboration, contributing to the growth and effectiveness of the emergency management and disaster resilience sector.

This field report highlights the lessons learned from the establishment of AWE about capacity building and representation of women in the fields of emergency management and disaster medicine. There have been nearly 2,000 members who have joined AWE for free, representing a broad range of emergency service and health organisations, community and nonprofit organisations, all levels of government, educational institutions, private businesses, volunteers, and community members. AWE partners with a wide range of organizations, including those from the emergency and disaster resilience sector, universities, sector groups, and other gender-focused organizations. AWE emphasizes diversity and inclusion, welcoming women of all intersectional identities and respecting individuals and allies of varied abilities, opinions, genders, and ethnicities. As AWE continues to grow, it highlights the impact of collaboration, shared knowledge, and empowerment in building a safer, more resilient future. Moving forward, AWE aims to expand its influence, driving positive change and supporting the establishment of similar groups worldwide, thereby contributing to a more equitable and diverse global emergency management community. This field report presents considerations for other global emergency management and disaster medicine contexts that are seeking to build capacity and address gender inequalities.

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20 Years Commemoration of Aceh Tsunami: Follow Up of Three Years Assistance in Post-Tsunami Health System Capacity Building in Aceh Barat District Hospital by University of Gadjah Mada

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Summary: Around twenty years ago, on December 26, 2004, at 07:58 WIB, an 8.9 SR tectonic earthquake occurred in the Indian Ocean, 66 km west of Aceh, and was followed by a 12-meter-high tsunami with a speed of 500-900 km/h that hit the west coast of Aceh. The disaster caused physical and non-physical damage. Sardjito Hospital and the University of Gadjah Mada (UGM) were among the institutions that participated in the reconstruction and rehabilitation of the health sector after the tsunami, especially in the West Aceh District. In commemoration of 20 years since this event, the UGM Disaster Health Management Working Group attempted to document the impact of health capacity building in Aceh, encompassing the acute response phase, transition phase, recovery phase, development and preparation phase, and exit strategy phase, involving numerous institutions and resources.

This field report was written using a qualitative observational approach. The authors were part of a UGM joint team that returned to Aceh Barat District in 2024 to document the lessons learnt from the nEMT UGM sent during the tsunami operations.

Following the tsunami, many improvements were made in disaster curricula, health facility preparedness, and health system strengthening. At least five activities involving the UGM team were organized to commemorate the 20 years of the tsunami, such as the Aceh Barat Hospital Preparedness Document Review in October, Testimonial of stakeholders engaged in operations documentation, national seminar and talkshow in collaboration with the local Medical faculty of University Syah Kuala, and a ceremonial prayer together on

the tsunami day in Meulaboh. All activities are stored in bencana-kesehatan.net.

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Pilot Study of the World Health Organization HEAT Tool to Assess Readiness for Emergency Trauma Care in Nepal

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Introduction: Nepal faces significant challenges in addressing trauma-related injuries, with falls, road traffic accidents, and burns being the leading causes of injury. A pilot study evaluated emergency care capacity at tertiary hospitals in Kathmandu, Nepal, using the World Health Organization's (WHO) newly deployed Hospital Emergency Unit Assessment Tool (HEAT). A focused secondary analysis of the HEAT tool results was conducted to assess emergency trauma capacity.
Methods: This cross-sectional mixed-method study uses the WHO HEAT Tool to assess resources for trauma care delivery through descriptive statistics and comparative analysis. The tool combines open-ended questions, scaled responses, and discrete answers to evaluate facility signal functions, focusing on "trauma interventions" and signal functions that reflect emergency trauma care capacity.
Results: Across all sites (n=7), an average 6.6 out of 10 trauma interventions were adequately available. All sites had adequate availability of resources for endotracheal intubation, bag-valve-mask ventilation, and oxygen saturation monitoring. Three sites reported adequate availability of mechanical ventilation but only one site had adequate availability of rescue surgical airway procedures. All sites reported adequate availability of needle decompression for tension pneumothorax and placement of tube thoracostomy. Only 1 out of 7 sites had interosseous access, while 4 had central venous access. All sites reported adequate availability of external hemorrhage control, wound packing, and suturing. Five sites reported adequate availability of pelvic binders. None of the sites reported utilizing the WHO Trauma Care checklist.
Conclusion: Integrating trauma care-related questions into the HEAT tool was a feasible methodology for assessing strengths and identifying critical gaps in trauma care delivery in Nepal. Major gaps were identified in care, such as capacity for rescue surgical airway procedures, mechanical ventilation, and utilization of trauma care checklists. Further validation of this tool in application to emergency trauma care can improve trauma care delivery in resource-limited settings like Nepal.

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Mount Lewutobi Laki-Laki Eruption Preparedness: Center for Health Policy Management, University of Gadjah Mada, Support in Development of Health Contingency Plan in East Nusa Tenggara Province to Mitigate the Health Impact of the Disaster

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Summary: Mount Lewotobi Laki-Laki in East Flores District, East Nusa Tenggara Province (NTT), Indonesia, erupted on Monday, November 4, 2024. At least nine people died, dozens more were injured, and several buildings burned due to 'material rain' from the eruption. Referring to data from the National Disaster Management Agency (BNPB), the local government has declared a two-month emergency response status from November 4 to December 31, 2024. Earlier this year, the consultant from the Center for Health Policy and Management, University of Gadjah Mada (CHPM UGM), visited NTT Province several times to assist the NTT Provincial Health Office (PHO) in developing a health contingency/preparedness plan. The impact applied in the Eruption of Mount Lewotobi Laki-Laki disaster response operation

This field report was written using an observational descriptive approach. The authors were part of a team of consultants who assisted in building health capacity for disaster management. The best practices and lessons learned are documented as part of academia's role in assisting the Ministry of Health in building the capacity of NTT PHO, so they are ready with a health contingency plan before a disaster strikes. During the early stage of response operations, the Health Emergency Operation Centre (HEOC) was activated with a solid organizational structure established, rapid health risk assessment (RRA) conducted, and integrally involving the sub-subclusters under the health cluster. Moreover, a response map was developed in the early stage of response, as well as a health cluster coordination meeting. Due to the efficient management of the existing health capacity, an EMT-CC has not yet been established, as no non-EMT personnel are required from outside the province. Furthermore, the NTT Province is an archipelago-type province; the capacity building provided by CHPM-UGM will help them determine where to establish the EMT-CC based on the response map and RRA results.

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Analysis of Free Medical Clinic Patient Needs During the Recovery Period After Hurricane Helene

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Introduction: Climate change has caused an increasing frequency and intensity of weather-related disasters that cause

devastation by flooding. Local clinics damaged by flooding take time to reopen, and in small rural communities like Asheville, NC, health care disparities increase after disasters. Little published data exists about patient needs during the recovery period, weeks after the initial disaster. Free mobile clinics responding to disasters would benefit from improved understanding of patient needs before entering the disaster zone.
Methods: A cross-sectional study was completed based on data collected at a free clinic located in Swannanoa, North Carolina, US, during the recovery period after Hurricane Helene. During five days, 40 patients visited the clinic and completed a simple survey stating the reason for their visit. The qualitative survey was analyzed to collect information to improve preparation for similar small free clinics working in flood response.
Results: Lack of medication for chronic problems, including hypertension and diabetes, was the most common reason patients came to the clinic. Respiratory problems, known to be a frequent concern after flooding, were the second most frequent reason patients sought medical help. Skin complaints were the third most common concern at the clinic.
Conclusion: Preparation is essential for medical clinics responding to disasters to ensure they have the treatments their patients are most likely to need. Chronic health problems, respiratory concerns, and skin issues are the most common ailments these clinics must prepare for.

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Mastering the Media Maze: Large-Language Model Analysis of Media Communications During a Conflict Deployment

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Summary: The objective of the study was to aggregate all media communications from a three-month conflict deployment of Canadian Medical Assistance Teams (CMAT), a small nongovernmental EMT Type 1, to Poland and Ukraine, and to examine them for adherence to communications best practices.

A media communications literature search using ProQuest and an organizational social media search were completed. Communications were categorized by date and as one of five media types: print, audio, video, authored by a volunteer, or third-party mention. Public information officer best practices were reviewed in the gray literature, and adherence to these practices was qualitatively assessed using Notebook LM, a publicly available large-language model.

Between March and August 2022, there were 45 media appearances, including 17 with video footage, 10 articles authored by volunteers, 9 audio clips, 7 printed news articles, and two third-party mentions. Media correspondence was distributed among 21 distinct volunteers, with two formally media-trained volunteers responsible for 20 instances (44.4%) of the correspondence and the remainder trained by briefing alone. Overall, no overtly negative or critical events occurred, for example, breaches of ethics or security.

Volunteers generally followed media orientation directions regarding communications and provided accurate information to the media. A dedicated communications specialist is needed to ensure a wide range of media, including traditional methods and social media, is created and managed, and that volunteers receive media training. Lastly, there is a constant security threat associated with divulging operational details to the press, which was addressed and successfully mitigated during our deployment.

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Thai Hospital Assessment Instruction and Evaluation Tool for Mass Casualty Incidents and Disaster Preparedness (THAIEVAT)

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Introduction: Hospital readiness is fundamental in major incidents or disasters for community preparedness. The Thai hospital's self-assessment tool for mass casualty incidents and disasters has been developed using a systematic review process. However, to determine levels of hospital preparedness, a scoring assessment tool needs to be developed for hospital evaluation.
Methods: The scoring assessment tool, based on the Thai hospital's assessment tool for mass casualties and disasters, was developed by 3 experts in emergency and disaster management, using the modified Delphi method and brainstorming techniques.
Results: All key elements of the Thai hospital's assessment tool for mass casualties and disasters were categorized according to the World Health Organization's Six Building Blocks Plus health system framework. A Likert scale ranging from zero to five (0-5), with five representing the highest score, for ease and to standardize continuous assessment, planning, and preparedness, was applied in each element. The sum of all achieved points will represent the level of hospital preparedness: low or minimum, in need of great improvement (0-59), average or in need of some improvement (60-79), and good or in need of less improvement (79-100).
Conclusion: The scoring for the Thai hospital's assessment tool for mass casualties and disasters, based on the WHO Six Building Blocks Plus health system framework, was developed. This tool can be used to determine the level of hospital preparedness and the quality assurance process.

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Challenges and Strategies for Power-Dependent Medical Device Patient Evacuation During Disasters: Findings from Okayama Prefecture

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Introduction: As healthcare advances, medical devices have become essential for diagnosis and treatment, making a reliable power supply necessary for their operation. The 2018 Hokkaido Earthquake demonstrated a surge in demand for treatments such as dialysis in disaster-based hospitals, leading to unexpected levels of emergency power usage. This highlighted the need for robust patient intake systems in both disaster-based hospitals and regional emergency hospitals. Additionally, the expansion of home healthcare has increased the need to accommodate ventilator-dependent patients during power outages, yet the rate of individualized evacuation planning remains low nationwide. To understand the current situation and develop future strategies, a survey was conducted in Okayama Prefecture to assess the preparedness of medical facilities regarding power-dependent devices and emergency response capabilities.
Methods: A survey targeting hospitals in Okayama Prefecture was conducted using Google Forms. Data were gathered on emergency power availability, power outage response protocols, and the capacity to admit patients reliant on powered medical devices.
Results: The survey was conducted in December 2023, achieving a response rate of 59% (93 out of 157 hospitals). Findings indicated that 87% of hospitals in Okayama had power-dependent devices. The continuity of emergency power varied significantly: 9% of facilities were uncertain, 41% had sufficient power for half a day, 15% for one day, 14% for two days, and 21% for three days. However, only 47% had established power outage response manuals. Additionally, only 34% of hospitals were prepared to accommodate home-based patients, relying primarily on manufacturers for necessary support.
Conclusion: These results reveal gaps in disaster preparedness, especially in emergency power continuity and the ability to admit patients with power-dependent needs. Addressing these issues requires strengthening preparations in normal times by forecasting healthcare demands and balancing them with facility capabilities. Regional disaster preparedness should also be advanced through collaboration between industry, government, and academia.

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Challenges and Strategies for Receiving International Disaster Medical Response Teams During Major Earthquakes in Japan

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Summary: In preparation for potential collaboration with international disaster medical response teams, particularly the U.S. DMAT, following a major earthquake in Japan, several challenges related to receiving international teams were identified. This study considers Japan's approach to receiving international medical teams and identifies and addresses key challenges in receiving international disaster medical response teams, including U.S. DMAT, during major disasters in Japan.

A tabletop exercise, simulating a major earthquake in Japan, was conducted to evaluate Japan's domestic support and response systems for international disaster medical response teams. The results included:

1. Operational Gaps: Japan's policy for large-scale disasters lacks specific guidelines on critical areas such as immigration procedures, verification of international medical licenses, logistics for pharmaceuticals, and management of communication and records.
2. Medical Liaison Need: Although the Ministry of Foreign Affairs provides liaison support, there is no plan for specific medical liaisons, highlighting the need to deploy trained DMAT or disaster medical professionals.
3. Logistical Challenges: The U.S. Embassy typically handles transportation and accommodations, but approvals are needed for communication setup, oxygen supplies, and medical resources, underscoring the need for pre-coordinated protocols.
4. US DMAT Exercise Findings: Virtual tabletop exercises with U.S. HHS and ASPR highlighted essential procedural steps for resource and operational alignment in a disaster.

To integrate international disaster medical response teams effectively during major disasters like the anticipated Nankai Trough earthquake, Japan must establish SOPs tailored to these teams, including pre-planned logistical and medical liaison roles. These frameworks not only benefit US DMAT but also serve as a model for supporting other international teams, enhancing Japan's disaster readiness through global collaboration.

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CrowdStrike Outage, Activation of Downtime Plans During a Complete Operational Impact

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Introduction: On July 19, 2024, SUNY Downstate Medical Center faced system-wide failures after a faulty CrowdStrike update. Disruptions to EMR, radiology, and lab workflows required immediate response. This presentation explores the impact and response to this global healthcare cybersecurity event.
Methods: SUNY Downstate activated its Emergency Operations Center and manual protocols. Communication was maintained through departmental huddles, Sendword Now, and the Telegram app. External partners, including NYCDOH and GNYHA, were notified as IT worked to restore critical systems.

Results: Through effective coordination, SUNY Downstate reduced downed workstations from 3,500 to 1,500 within hours. Critical systems, including EMR and radiology, were restored by the next day, allowing continued care despite manual lab operations and limited access to certain tests.
Conclusion: This incident reinforced the need for robust emergency and cybersecurity protocols in healthcare. SUNY Downstate's response minimized patient impact and highlighted the importance of preparedness, clear communication, and resilient systems for future incidents.

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Developing Representative Complex Casualty Cases for Modeling Healthcare System Throughput

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Introduction: The congressionally directed NDMS Pilot Project evaluates civilian medical system readiness to manage 1,000 repatriated casualties daily over 100 days from a conventional near-peer conflict. This component simulated patient throughput in NDMS-enrolled healthcare facilities within the National Capital Region (NCR) to assess capacity and identify constraints. Researchers developed projected combat casualty cases to accurately predict healthcare resource needs, treatment phases, and patient throughput under high-volume conditions.
Methods: Emergency Medicine physicians conducted a literature search and analysis incorporating recent US military experience and peer-reviewed medical literature to project likely injury patterns. Researchers analyzed 1,817 de identified trauma cases from GWU Hospital (2018-2022) and 989,989 cases from the National Trauma Data Bank (2016-2021) to capture similar injury profiles. A prospectively developed Combat Casualty Case Data Tool tracked demographics, ICD-10 codes, medical specialty requirements, bed types, and timelines for sequential treatment phases. Formatted in Excel, the tool enables simulation operators to adjust casualty types and prevalence, examining impacts on resource availability and patient flow. Each case includes an "Arrival Severity Designation" for triage priority, while patient journey maps outline "Optimal Patient Journey Time" and resource needs.
Results: This approach produced 204 casualty cases, representing a distribution of anticipated injury types and resource demands. This case collection promotes realistic modeling to assess NDMS capacity, with structured data supporting precise tracking through patient care phases from airfield arrival and case distribution, care throughput, recovery, and indicated rehabilitation until NDMS discharge.
Conclusion: The detailed casualty cases are essential for understanding and planning the NDMS surge capacity that respects clinical standards. By capturing phase-by-phase patient care needs that are matched to healthcare facility capabilities, this model supports accurate healthcare resource assessment and guides future NDMS projects on patient throughput and resource allocation. Future versions could incorporate more detailed rehabilitation and residential care needs for more accurate end-to-end healthcare throughput projections.

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Harnessing the Power of Mobile and Messaging Apps for Risk Communication and Intervention During the COVID-19 Pandemic: Lessons from the Western Pacific

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Summary: The spread of mis- and disinformation on mobile and messaging apps during the COVID-19 pandemic not only fuelled anxieties and mistrust in health authorities but also undermined the effectiveness of the overall public health response. For context, mobile and messaging apps help users stay informed and connected to their families, friends, colleagues, and communities. However, during the COVID-19 pandemic, these apps were also one of the primary channels where misinformation and disinformation circulated.

Recognizing the importance of including mobile and messaging apps in risk communication and emergency response strategies, the World Health Organization (WHO) and some countries in the WHO Western Pacific Region independently piloted initiatives to reach messaging app users, meet their evolving information needs, and streamline health ministry communication.

The enhanced use of mobile and messaging apps enabled consistent and timely communication, improving coordination during the COVID-19 pandemic. Leveraging their features also helped identify and potentially fill crucial information gaps, mitigating the harms of mis- and disinformation and fostering stronger trust in health authorities.

The findings from the work carried out by WHO and countries in the Western Pacific Region identified some promising innovative communication interventions using mobile and messaging apps. While these interventions should be further explored and evaluated, they have demonstrated that interventions need to be proactive, flexible, and able to adapt to changes in misinformation and disinformation content shared through messaging apps.

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Enhancing Hospital Preparedness for Megathrust Earthquakes: A Review of CHPM's Training on Hospital Disaster Plans

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Summary: Indonesia's geographical position, situated among multiple tectonic plates, renders it exceptionally vulnerable to megathrust earthquakes. Given this risk, hospitals, as key health care facilities, must develop comprehensive Hospital Disaster Plans (HDPs) to respond to such emergencies effectively. Since 2008, the Center for Health Policy and Management (CHPM) at Universitas Gadjah Mada has conducted a series of HDP training programs. Post-COVID-19 Pandemic, these trainings have transitioned to in-person technical guidance sessions, although some online training activities continue.

In 2024, the training program featured one HDP online seminar and one three-day in-person HDP technical guidance session. The online seminar provided basic and core HDP knowledge, while the in-person session focused on practicing risk analysis and the Hospital Safety Index (HSI) within a megathrust earthquake context. Participants developed detailed job action sheets and standard operating procedures for disaster response.

A total of nine hospitals and 38 individuals engaged in the training activities. However, only three hospitals attended the technical HDP development guidance. Throughout the sessions, participants actively reviewed and discussed their existing HDP documentation. Despite these efforts, evaluating the revised HDP documents proved challenging due to the inability to conduct on-site observation of hospital environments. Participants also supplied limited evidence, particularly concerning data to support their HSI indicators. As an alternative, we recommended that participants utilize contingency plans or disaster risk assessments issued by the National Disaster Management Agency (BNPB) and local Regional Disaster Management Agencies (BPBD).

HDP training is vital in addressing the evolving landscape of disaster risks. Accordingly, updates to HDPs should prioritize enhancing hospital preparedness for effective disaster response, rather than merely meeting institutional accreditation standards.

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Preparing a Tertiary Medical Center for a Missile Attack

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Introduction: With the increasing availability of longer-range missiles and explosive-carrying unmanned aerial vehicles, the risk to civilian targets, including hospitals, has increased worldwide. Recent events place Israeli cities and hospitals at high risk of such attacks. Following four months of preparations, a large-scale missile attack drill was conducted at Beilinson Tertiary Medical Center. Drill components included missile strikes on hospital buildings, followed by a multi-casualty chemical incident caused by a missile strike on a HAZMAT container.
Methods: Descriptive analysis of the drill design, preparatory actions, and after-action reports.
Results: Preparations included: re-training hospital staff on the actions during an imminent missile strike, training of ED and ED staff reinforcements on logistical and medical preparedness for mass casualty chemical incidents. The drill scenario included structural damage to four hospital wards. Injured patients and staff members were evacuated to the ED, and a rapid safety assessment was performed, leading to the decision to evacuate them. In the following stage, over 50 simulated chemical injury patients from a nearby explosion were transported by EMS to the hospital. Insights gained from the second stage highlight the need to improve staff preparedness for mass chemical incidents, communication, and command and control challenges by fully training personnel in decontamination areas. There was a personnel shortage in the decontamination areas operating in the ED ambulance bay, and frequent staff rotations were needed due to fatigue. Staff training on actions during a pre-strike alarm, post missile strike safety assessment, and ward evacuation proved effective.
Conclusion: A hospital missile strike scenario is extremely challenging. It requires enhancing hospital preparedness, focusing on rapid actions during a pre-strike alarm and post-strike care and evacuation of the injured. It also requires immediate assessment of post-attack structural safety and the need for complete evacuation of structurally unsafe hospital areas. Difficulties included assuring patient flow and command and control during decontamination.

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Disaster Response Training for Enhancing Community Resilience: A Case Study in Taiwan

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Summary: The occurrence of disasters often has a tremendous impact on communities. In large-scale disasters, affected residents often need to rely on self-rescue before emergency response resources arrive. Therefore, enhancing the disaster response capability of community members is increasingly important, especially in light of the current extreme weather conditions.

From 2020 to 2024, the organization conducted 15 training sessions for frontline community responders, with over 1,000 participants in total. The training included classroom lectures, hands-on practice, and scenario-based drills to increase

familiarity. A post-training assessment was conducted to ensure that participants understood and were proficient in the skills and knowledge taught in the course.

In the final assessment, all participants passed, achieving a 100% success rate. In the technical skills section, participants were able to independently complete all tasks. During the lecture sessions, instructors engaged with participants in comprehensive drills to confirm their retention of the course content.

Building community resilience is not a short-term endeavor with immediate results. Starting from basic first aid education and gradually expanding to all-hazard response training, the long-term planning and implementation of frontline community responder training can strengthen the community's comprehensive response capabilities, equipping them to effectively handle both natural and human-made disasters in the future.

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Urgency Preparing Health Disaster Plan in Magelang District after Merapi Eruption

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Introduction: Mount Merapi erupted again in early 2021, impacting Magelang Regency. The Disaster Agency of Magelang District strengthened its early warning system and evacuation site after the largest eruption of Mount Merapi in 2010. Even though the data showed there were no fatalities in Magelang District, public health issues emerged at the refugee camp. Public health programs should always be available to refugees living in camp settings and settlements. The District Health Office (DHO) Magelang, as the coordinator of the Health Emergency Operation Center (HEOC), needs to prepare a health disaster plan to manage public health services, coordination, collaboration, and communication.
Methods: Training and mentoring in preparing the DHO Magelang disaster plan had been carried out for approximately eight months. During the mentoring process, many issues need to be prepared in health disaster planning, and in line with the Contingency Plan for Mount Merapi Eruption, which was arranged by the Disaster Agency of Magelang District.
Results: The Disaster Agency of Magelang District has already arranged a contingency plan for the Merapi Eruption. However, this document does not detail the role of the health sectors, so DHO Magelang needs to prepare an operational planning document (DHO disaster plan). Preparing for health disaster planning is very helpful in mobilizing resources to meet the basic needs of victims in refugee camps. DHO explores strategies that can be implemented to improve the role and function of HEOC. Resource arrangements, coordination, roles and functions, procedures, and strategy planning were urgent to manage and integrate into disaster planning documents.
Conclusion: The urgency of integrating the document contingency plan for the Merapi Eruption and the document DHO disaster plan lies in equalizing the scenarios used, coordinating the operation health cluster and arranging facilities, including evacuation sites, and preparing SOPs.

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Assessing Hospital Safety in Colombian Private Clinics: A Retrospective Analysis of the Results of the Application of the World Health Organization's Hospital Safety Index

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Introduction: Ensuring hospital functionality during and after disasters is crucial for global communities. The World Health Organization's (WHO) Hospital Safety Index (HSI) serves as a robust instrument for evaluating hospital safety to disasters in three components: structural, non-structural, and emergency and disaster management. This study leverages HSI scores to assess safety trends in 15 private clinics in Colombia.
Methods: A retrospective analysis was conducted on existing Hospital Safety Index (HSI) scores from 15 private Colombian clinics (2015-2023). Data was sourced from the safety index calculator tool of each institution, which reflects the evaluations by a multidisciplinary team (structural engineer, hospital architect, disaster management nurse). Results were contrasted with the evaluation team´s recommendations. Correlation analysis explored the relationship between specific HSI components and overall safety performance.
Results: The primary threats to all clinics were earthquakes and fires. Overall, the structural and non-structural components demonstrated adequate safety levels for both risks. Key areas of concern include insufficient knowledge about post-disaster water and energy autonomy and inadequate restrain of furniture, equipment, and pharmacy/warehouse contents to prevent tipping during an earthquake. The analysis revealed that emergency and disaster management was the weakest component across all clinics, with a prevalence of the "paper plan syndrome".
Conclusion: The results consistently show that while there are aspects of the structural and non-structural components that are common to all clinics that could be improved, the primary deficiency lies in the lack of a comprehensive emergency and disaster risk management plan. Such a plan should promote a gradual reduction of vulnerabilities, be based on an understanding of the real challenges posed by a disaster, and be developed in a multidisciplinary manner by decision-makers. Moreover, the plan should be disseminated to all employees, contractors, and patients, tailored to their specific roles.

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Analysis of Assessment Information for Evacuation Facilities in the Noto Peninsula Earthquake

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Introduction: The Disaster/Digital Information System for Health and Well-being (D24H), fully operational since April 2024, supports health, medical, and welfare teams in disaster-stricken areas by integrating, analyzing, and providing data collected by various teams. During the 2024 Noto Peninsula Earthquake, the system was used by the coordination headquarters and health centers to assess evacuation shelter conditions. Disaster Medical Assistance Teams (DMAT) and other support teams conducted assessments based on Sphere standards, recording data for approximately 400 shelters, resulting in over 4,500 updates from January to August 2024. The study aims to collect data to analyze changes in the shelter environment and the effects of support interventions, contributing to improved disaster response planning. This study aims to enhance future disaster response planning and support by using the collected data to analyze changes in shelter environments and the effects of support interventions.
Methods: Data from the D24H Survey were analyzed as a time series. The collected data were cleaned for correct anomalies and missing values. Time-series analyses visualized changes in resource supply and infrastructure sufficiency, while regression analysis examined the effects of support team visits and resource delivery timing on environmental improvements, identifying effective support indicators.
Results: The study identified temporal trends in shelter resources and infrastructure sufficiency. Comprehensive assessments revealed a relationship between support interventions and shelter conditions. Criteria for high-risk shelters were established, providing evidence for prioritizing support plans.
Conclusion: The study clarified the relationship between shelter conditions and support interventions, providing a framework for prioritizing disaster support. The findings enhance the efficiency of disaster responses, enabling better resource allocation, standardizing support activities, and improving public health and living conditions in shelters.

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Human Resource Distribution During the Wexford General Hospital Emergency Department Fire and the Effect of Redirecting Doctors During Time of Temporary Downscaling

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Introduction: Despite mitigation safety measures, disasters will occasionally impact medical facilities. This report examines the 2023 Wexford General Hospital (WGH) fire's impact on emergency doctor redistribution and patient safety. Little has been written to date on staff redistribution after a healthcare facility's temporary closure/reorganization. A change in the standard ED profile was necessary because of extremely limited inpatient & ICU beds for 4 months, with Ambulance diversion, and the Standard Emergency Department (ED) model of care was amended to an injury unit & assessment units for medical, surgical, and pediatric patients. Skeleton staffing remained on site, and nursing/medical/admin staff were redirected to regional receiving facilities.
Methods: Data was obtained from the roster coordinator, WGH's managerial planning committee, and standardized anonymized reports from the electronic patient record system, iPMS.
Results: WGH ED distributed 45% of the medical staff to a neighboring hospital, which geographically would have addressed the majority of patient diversion. The study found that despite WGH ED injury unit functioning with fewer staff, average waiting times across all patient categories decreased by 77%, down from 3 hours and 12 minutes to 44 minutes. This occurred despite the patient load only being down 56% on average.
Conclusion: The redistribution of staff to neighboring facilities helped alleviate the additional workload in those facilities and did not result in a significant increase in waiting time for walk-in and GP-referred patients to the injury and assessment units. Encouragingly, it decreased patient waiting times, highlighting the importance of process flow adaptation during and in the recovery phase of a disaster. Adjusting the ED services to identify and continue to safely manage appropriate patients unlikely to need admission locally was also found to have a positive impact on patient turnover and limited the effect on other regional receiving units for that extended 4-month duration.

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HealthCare at War: Operational and Ethical Challenges

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Summary: Medical and public health services in war present extraordinary challenges that fundamentally change routine practice. Repetitive strikes on medical facilities and stress borne of burnout create an environment of uncertainty. Yet, the passion to "do no harm", act fast, and do the right thing, even under the most stressful circumstances, is strong. Multiple global conflicts challenge the often-ignored interface between the military and civilian healthcare sectors. The humanitarian focus of medicine inextricably points to a higher calling, to rising above atrocity, cruelty, and the horrors of warfare. The best reaction to the unthinkable is education; education that reinforces essential values without exception. Those saving life and

limb under combat conditions are at the forefront of disaster medicine. Examining their world offers valuable lessons.

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Impact on Mortality with the Implementation of an Emergency Disaster Response Protocol in the Emergency Department

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Introduction: Mexico has been subject to many social and natural events that have tested its response capacity, especially with regard to infrastructure and sanitary resources. Wide complex hospitals are a central response axis and reference in this type of event, so guaranteeing its comprehensive response, organized and with a decisive vision, promotes a prevention and mitigation strategy risk in the face of events of this nature, improving the prognosis and mortality of patients from the Emergency Department.
Methods: Having as objectives, they analyze national and international regulations, in particular the safe hospital program as the axis of hospital response, as well as the existing documents on emergencies and disasters at the hospital level, they recover the statistics of the last 10 years in which Emergency and Disaster events have occurred and their impact on the mortality of patients treated in the Emergency Department of the Medical Center. A quantitative analysis of the events was carried out, with a retrospective methodology to analyze the events of different causes (epidemiological and trauma) to describe central tendency statistics on them as well as describe the associated mortality.
Results: The findings of the events were divided into epidemiological and traumatic, and the injuries found in the patients were described as mostly traumatic in the upper trunk. Finding that in the last events of the last 10 years, there has been mortality < 0.06% for patients treated under mass reception protocols in our center.
Conclusion: Mortality of patients in Emergencies and Disasters is linked to the Emergency Department protocols to provide care to patients. The safe hospital strategy continues to be a current tool to base response protocols. Training staff ensures that everyone speaks the same language and has common objectives.

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Evaluation of Factors Causing Delayed Patient Transfer from Emergency Department to Specialized Departments: A Prospective Observational Study

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Introduction: Timely transfers from emergency departments (EDs) to specialized departments are crucial for ensuring prompt, appropriate care. Delays in these transfers can lead to adverse outcomes, extended hospital stays, and increased healthcare costs. This study aims to evaluate the causes and assess the impact of delayed patient transfers from the ED to specialized departments, to enhance patient care. The primary objective of the study is to record and categorize the root causes of the delayed transfer.
Methods: After ethical clearance was obtained from the institutional ethical committee. This single-center, prospective observational study at AIIMS Bhopal included patients aged 18 years and above who remained in the ED for over 24 hours. Over six months, data were collected on delay factors such as patient-related issues (e.g., multiple comorbidities, poor prognosis), physician-related factors (e.g., inter-departmental communication gaps), and resource limitations (e.g., ICU bed availability). Descriptive statistics determined the prevalence of each delay factor, while Pearson's Chi-square and Spearman's rank correlation assessed associations between delay durations, patient outcomes, and APACHE II scores. Multiple regression analysis was adjusted for confounders to explore key factors influencing delays.
Results: Delays were primarily attributed to inter-departmental confusion (40%), often in cases involving polytrauma, patients with multiple comorbidities, Additional factors included: lack of ICU bed availability (30%), patients managed completely outside the ED with no active interventions required from specialized departments (20%), and cancer patients with metastatic disease needing palliative care (20%). Miscellaneous reasons accounted for 10% of the delays. Transfer delays were associated with longer hospital stays but did not significantly impact overall mortality.
Conclusion: Identifying and addressing factors that delay patient transfers can improve healthcare efficiency and patient outcomes. Streamlining communication and optimizing resource allocation can reduce Emergency Department (ED) overcrowding and ensure timely transfers to specialized care. Future efforts will focus on implementing these findings to minimize delays at our institution.

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Disaster Medical Response Model in Hualien, Taiwan

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Introduction: Hualien County, stretching 137.5 kilometers, is characterized by mountainous terrain that complicates external transportation. Medical resources are mainly concentrated in northern Hualien, and disaster relief efforts face huge challenges. To this end, the Hualien Health Bureau established the Hualien Disaster Medical Assistance Team (DMAT)

and developed the mobile application system iDMAT. The team collaborates closely with the Fire Department and receives logistical support from the NGO Tzu Chi Foundation to ensure swift and effective rescue operations.

Methods: 1. Inter-agency Collaboration: Hualien DMAT is composed of medical and administrative staff from eight hospitals and works jointly with the Fire Department. EMTs arrive at the disaster scene first, setting up casualty collection points in cold zones. Hualien DMAT's advance team then joined them to enhance patient care. Tzu Chi Foundation maintains logistics. 2. DMAT Advance Team: This team consists of one physician, two nurses, and two administrative staff members. They can quickly reach the disaster scene and initiate preliminary rescue actions, meeting the flexible needs of multi-site disasters. 3. iDMAT Development: DMAT members use the iDMAT APP to log disaster assessments and patient information in real-time. By scanning patient wristband QR codes, teams track triage, treatment, and transfer progress. All data is uploaded to the cloud, ensuring information accuracy and continuity.

Results: During the 2021 Taroko train accident, the 2022 Taitung earthquake, and the 2024 Hualien 0403 earthquake, the DMAT advance team swiftly conducted on-site assessments, reporting directly to the Health Bureau via iDMAT. This real-time data sharing enables disaster relief decisions to be made promptly, while hospitals receive patient updates in advance, greatly enhancing treatment efficiency.

Conclusion: Hualien's integrated model of inter-agency collaboration and iDMAT application reduces response times and ensures continuous patient care, alleviating healthcare provider burdens. This model effectively improves disaster response capability and highlights the value of real-time information management in disaster relief.

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Building Medical Self-Sufficiency in a New Disaster Volunteer Relief Team

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Summary: Local health services can be quickly overwhelmed in the aftermath of a disaster. As a veteran-led disaster relief charity founded in 2022, Taskforce Kiwi identified an ethical imperative to not be a burden on disaster-affected health services while it assists that community in recovering. This requires the volunteers to have the appropriate first aid skills to treat likely injuries within the team. Taskforce Kiwi identified a skill gap between basic first aid and Defense Force/Emergency Services Medic training. With no appropriate courses available, Taskforce Kiwi developed a bespoke peer-led solution that does not require complex or extensive training equipment and can thus be easily implemented by other voluntary organizations in low-resource communities.

The curriculum requirements were researched and are evidence-based, focusing on common injuries encountered by disaster relief volunteers, such as wounds prone to infection and soft tissue injuries. Delivery is a one-day session covering patient assessment, hemorrhage control, wound care, including delayed closure, heat stress, coached rehydration, scripted telehealth consultation, incident roles, and the use of standing orders for medication, including inhaled methoxyflurane analgesia. A public first aid certificate is a prerequisite, and a pre-course webinar enables the peer-led training to be delivered to volunteers in a timely and cost effective manner.

Post-course surveys of the Disaster First Aid course indicate an average 28% increase in perceived confidence across numerous skills. Over three sessions, Disaster First Aider capacity was increased by 24 people. The participant's most valuable session was wound cleaning, which involved using fresh dead pigskin, soil, simulated blood, steri-strips, and dressings.

The Disaster First Aid course fills the training gap between basic first aid and trained medics, building capacity within Taskforce Kiwi. When funding and equipment are scarce, the course provides an effective solution to disaster volunteer organizations.

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Development of a Trauma Surge Protocol Following Viaduct Collapse

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Summary: In the early hours of July 14, 2017, a structural collapse of a viaduct under construction in the east of Singapore resulted in 1 fatality and 10 casualties with serious injuries. All casualties were conveyed to the nearest hospital, Changi General Hospital (CGH). The unexpected wave of patients exposed critical inefficiencies in interdepartmental coordination and resource management, highlighting the need for a protocolled response to a casualty surge.

Singapore has a tiered civil emergency response plan to cater to mass casualty incidents with more than 20 casualties at a single institution. CGH's experience identified a gap in the management of moderate patient surges, defined as an influx of 5-20 critically injured individuals. Based on findings from internal audits and post-event analysis, a trauma surge protocol was developed, addressing coordination, resource allocation, and team communication.

Key protocol recommendations:

1. Protocol Activation: The trauma surge protocol is activated when patient influx exceeds normal capacity with regard to casualty numbers and acuity level, triggering call tree activation with information cascade. This allows for rapid diversion and redeployment of resources and personnel.
2. Role Clarity: Interdepartmental role clarification enables the distribution of responsibilities among medical, nursing, and operational personnel from Emergency Medicine, General Surgery, Orthopedic Surgery, Anesthesiology, Radiology, and Laboratory Services.

3. Resource Management: Streamlined triage guidance optimizes the allocation of resources such as blood products, advanced imaging, and operating theatre space. This accelerates patient throughput and minimises disruption to in-flight patients.
4. **Communication:** Protocolization establishes communication channels and clear workflows, facilitating interprofessional collaboration among responders working in a high-pressure environment.

Most recently, in July 2023, the trauma surge protocol enabled CGH to manage five critically injured casualties from a heavy vehicle road traffic accident more efficiently. Further protocol refinements will be supported with post-event evaluation and regular interprofessional simulation training.

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The French Model of Regional Organization for Disaster Response: Specific Features of the Regional Reference Health Establishment of Occitanie (RRHE Occitanie)

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Summary: As part of the French health system's response to exceptional events, a regional organization has been set up. The decree of January 18, 2024, appoints the RRHEs and describes their reference missions, capacities, and means of care and diagnosis.

The Toulouse University Hospital has been designated as an RRHE and provides reference missions for CBRN (Chemical, Biological, Radiological, and Nuclear) risks, as well as climatic and medico-psychological risks. It provides a diagnostic and therapeutic care mission for patients in the context of a CBRN event or one causing numerous somatic and psychological injuries.

It has provided expertise and technical assistance to the Regional Health Agency in the development of operational plans and in the creation of adapted care pathways. Through technical expertise, it has supported the region's health establishments in the preparation and local management of Exceptional Health Situations (EHS).

The RRHE has developed and managed a network of healthcare professionals comprising independent healthcare professionals or those working in healthcare establishments, who are responsible for EHSs as part of the care pathway. Finally, it has organized and coordinated the training of EHS trainers and regional EHS referents, as well as coordinated regional and interregional exercises.

In 2024, 26 RRHEs in France were financed by a specific grant. At Toulouse University Hospital, it financed medical time for each risk, managerial time, pharmacist time, non-medical staff, logisticians, secretariat, and laboratory technicians.

The RRHE Occitanie has established a multidisciplinary team specific to the Occitanie region, which, despite its recent appointment, responds effectively to the missions entrusted to it.

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The Health System Readiness for MCI in a Remote City with Limited Health Services

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Summary: Eilat is the southernmost tourist city in Israel, with a population of about 65,000. The Iron Swords War brought 65,000 displaced people to the town. The local hospital has 67 beds, no trauma unit, three operating rooms, and a few specialist doctors. The referring hospital is about 100 km away, and the nearest airport is 20 minutes away. Given the worsening threat of an MCI in the city and taking into account the hospital's limitations, the Ministry of Health's hospitalization desk, in cooperation with the rescue forces and the army, drew up an action plan:

- Increasing the number of personnel, including orthopedists, surgeons, pediatric surgeons, anesthesiologists, intensive care specialists, traumatologists, Emergency Physicians, and nurses as a backup team.
- Converting the hospital into a triage facility, performing life-saving procedures, delaying treatment, and determining the priority order for secondary evacuation.
- Training was conducted for both the hospital and its backup staff. There were many MCI exercises, including sudden drills, cooperating with the army, and the rescue forces.

In the hospital, there was a significant knowledge gap regarding the operation of the RN and familiarity with the RN's manual. Officials did not know their defined mission, and the hospital headquarters did not demonstrate command and control during the incident. The hospital did not compile a situational picture that allowed decision-making and casualty evacuation as required. The hospital headquarters did not demonstrate command and control during the incident. A lack of trained medical professionals from the trauma profession was observed.

Recommendations:

- The hospital permanently placed skilled personnel from the trauma professions throughout the war. Conducting joint training to enhance the skills of hospital personnel in triage.
- Daily practice of all staff for MCIs.

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Navigating Crisis: Innovating Emergency Medicine Education and Training in India through Insights from the COVID-19 Pandemic

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Summary: The COVID-19 pandemic profoundly impacted healthcare systems worldwide, with India experiencing over 45 million confirmed cases and more than 534 000 deaths (WHO, 2024). This crisis significantly disrupted training programs globally, including the Ronald Reagan Institute for Emergency Medicine at George Washington University institution's longstanding partnerships with 18 institutions across India focused on delivering education and training for emergency medicine (EM). The scale and duration of the pandemic posed unprecedented challenges to providing essential support to EM trainees, yet also underscored a critical global initiative to enhance resilience during times of crisis. As the pandemic unfolded, traditional in-person training faced severe limitations, prompting a shift to remote education. This transition allowed us to leverage online platforms for real-time didactics, case discussions, tele simulations, and remote procedural workshops, ensuring educational continuity for approximately 150 EM trainees annually. This innovative approach maintained engagement and demonstrated the scalability of distance learning to enhance education while supporting workforce development. Moreover, the pandemic amplified the importance of interprofessional collaboration and mentorship, as virtual platforms enabled connections among trainees and faculty across geographic boundaries, illustrating the resilience of educational networks in times of crisis. This experience underscored the necessity for adaptable curriculum delivery, which has led to hybrid models combining virtual and in-person training in the post-pandemic landscape, including a virtual tabletop exercise on disasters. The lessons learned from the pandemic presented a unique opportunity to innovate EM training at our partner sites in India, equipping the workforce to better respond to future healthcare challenges. By embracing adaptable training models, we can enhance educational experiences and ultimately improve emergency care delivery during times of crisis, fostering sustainable workforce capacity that strengthens healthcare systems overall.

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Preparedness in Practice: Disaster Management Training for Medical Students

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Introduction: The International Federation of Medical Students' Associations (IFMSA) organizes the International Training on Disaster Management (ITDM) workshops to equip medical students and future health professionals with the knowledge and skills necessary to contribute effectively to disaster risk management and humanitarian response. This abstract reviews the outcomes of international training workshops conducted over three years, focusing on disaster risk reduction, international humanitarian law, and the right to health in disaster scenarios.

Methods: Three-day international training sessions targeted medical students from various countries. Key outcomes were assessed through attendance records, post-training evaluations, and engagement in global networks and fieldwork opportunities.

Results: Eight international trainings were conducted, engaging over 70 medical students from diverse backgrounds. Post training evaluations indicated a significant increase in participants' understanding of disaster preparedness, response, and advocacy skills. Participants reported enhanced capabilities to engage in meaningful youth participation and contribute to policy discussions regarding health rights during emergencies. Furthermore, participants successfully joined international networks, leading to collaborative initiatives in disaster management.

Conclusion: The ITDM workshops have equipped future health professionals with the skills and knowledge necessary for disaster response. Through this program, participants are empowered to advocate for ethical standards in health emergencies and strengthen global collaboration among youth in the medical field. Such outcomes demonstrate the urgent need to include education on disaster risks in the training curriculum for medical students worldwide, ultimately contributing to more resilient health systems in the face of disasters.

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The Importance of Professional Information Delivery is Crucial for the Public's Trustworthiness in an Emergency

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Introduction: The Israeli health system was responsible for leading the fight against SARS-COV-2 as a medical emergency, making delivering real-time, professional information to the population crucial. The survival of the Israeli healthcare system during disasters is closely linked to the provision of medical services by the four HMOs. Professional and relevant spokespeople must ensure effective information delivery by

adhering to the highest standards. This study assesses how professional information is communicated to the Israeli public.

Methods: During the COVID-19 pandemic (2020-2022), thirteen influential individuals from the Israeli healthcare system, actively involved in leading the country's response, were extensively interviewed using a semi-structured approach. The interviews underwent evaluation by a peer review panel. Access to participants was obtained, and the interviews were conducted in person or via Zoom. The participants were provided with the questionnaire format in advance. The data analysis was done with ATLS.TI 22, resulting in the identification of six themes. One of these themes emphasized the importance of delivering professional information to establish public trustworthiness during emergencies. The themes were derived by identifying recurring concepts and categories within the participants' quotes.

Results: Many instances were uncovered, illustrating the paramount significance of professional information delivery in shaping the trustworthiness of the public during the COVID-19 pandemic. All 13 interviewees unequivocally recognized the impact of professional information dissemination. They supported their viewpoints with concrete illustrations, emphasizing the role of physicians as spokespersons, the need for media interaction through question-and-answer sessions during conferences, and the importance of unified messaging across all media platforms and among all professionals involved.

Conclusion: The study demonstrates the approach adopted by the Israeli healthcare system in managing the pandemic, encompassing an examination of the ramifications of professional information delivery. The abundance of lessons and examples presented may also hold relevance for other countries, offering potential for broader application.

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Flowchart vs. Checklist: Which Is More Effective in Hospital Emergency Response?

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Introduction: Flowcharts and checklists are frequently used by hospitals as reference tools during disaster responses. However, there is a lack of research comparing their effectiveness in aiding responders. This study aims to evaluate whether flowcharts or checklists provide better support to personnel during hospital emergencies.

Methods: The study involved 24 fire drills in a hospital ward, with groups of 6–7 participants responding to a simulated fire. The participants were divided into six groups. Three groups used flowcharts (F groups), and three used checklists (C groups). Each type of group was further subdivided: F1 and C1 received only the tool (flowchart or checklist) without explanation; F2 and C2 received the tool along with an explanation of how to use it; F3 and C3 were assigned a designated person responsible for using the tool. Performance was assessed in three areas: fire response, medical response, and participant evaluation. Fire and medical response were each evaluated on nine specific tasks, scored from 0 (not completed) to 2 (fully completed). Participant feedback was measured using a 5-point Likert scale. The differences among the groups were analyzed using ANOVA.

Results: Fire response scores ranged from 1.00 to 1.31, and medical response scores ranged from 1.06 to 1.31. There were no significant differences in fire (P=0.09) or medical (P=0.83) response scores among the six groups. However, participant evaluations showed significant differences between F1 and F2 groups (P=0.04), with overall ratings ranging from 4.33 to 4.95.

Conclusion: The study found no significant difference in fire or medical response performance between flowchart and checklist users. However, providing explanations improved participant satisfaction with flowcharts. Both tools can effectively aid disaster response personnel.

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Challenges and Prospects for Outpatient Care in JDR Medical Team

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Summary: The Japan Disaster Relief(JDR) Medical Team was classified as an Emergency Medical Team (EMT) Type 2 in 2016 and reclassified in 2023. A working group has been set up to prepare the system for actual operations regularly, and the Type 2 outpatient care and Type 1 Fixed and Type 1 mobile are led by the Clinical Care 1 Working Group C1. The C1 is made up of members from multiple professions and is mainly focused on the functions required for outpatient care, and is not restricted to any particular profession, but is conducting a cross-sectional study.

A SWOT analysis of the C1 activity structure and studies will be conducted to identify proactive and improvement strategies.

Internal 'strengths' included the multidisciplinary nature of the C1 and the fact that the team members have experience in responding to disasters at home and abroad. Weaknesses included the fact that the manuals prepared were not fully utilized due to the large number of pages and the burden of reading for the team members. External factors such as limited training and drills, were cited as 'opportunities. 'Threats' included improved response capabilities of other teams.

It is important to develop an ambulatory care system with members comprising multiple professions, as in C1, so that

the construction of a system in each department can be examined in a cross-sectional and practical manner. On the other hand, for the JDR medical team, which has limited opportunities for dispatch, it is necessary to prepare manuals and study their operation in line with normal conditions and actual activities to ensure smooth activities at the time of dispatch.

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Expanding Hospitals During Disasters: A Scoping Review of Temporary Annex Facilities in Hospitals During the COVID-19 Pandemic

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Introduction: Space is a crucial hospital resource that is often overwhelmed by patient surges during disasters. Temporary hospital annexes were key infrastructural expansions forced by the COVID-19 pandemic. This scoping review explored construction, workflow features of, and experience setting up annex facilities.
Methods: Pubmed, Embase, and CINAHL databases, as well as gray literature, were searched for articles or reports of annexes, shelters, or related structures built or adapted within hospitals for clinical use during the pandemic. Reference lists and citations from included manuscripts were manually searched. Design, physical properties, construction process, workflow, and clinical utilization were extracted using a predefined form and thematically analyzed.
Results: 470 articles were screened, and 9 relevant articles were identified. Broad strategies for temporary annex facilities were (1) repurposing non-clinical areas and (2) building de novo structures. Non-clinical areas repurposed were a conference room and a multi-storey car park. De novo structures built were tents, containers, or both in combination. The annexes were often located adjacent to the emergency department (ED) (6, 66.7%), where the surge was greatest, and used for triage, swabbing, and low-acuity management before discharge. Car parks (2, 22.2%) were chosen for their segregation from clinical buildings while still being accessible for diverting stable patients from the ED and referring providers. Most annexes used for low-acuity ED diversion were converted or built in three to six days. One de novo container, a 50-bed isolation ward, required 50 days. Two reports used de novo containers and tents for Computed Tomography and plain radiography, respectively. Reports describe reduced ED length of stay, wait times for investigations, and Personal Protective Equipment usage.
Conclusion: This scoping review identified strategies to increase hospital infrastructure capacity and matched relevant construction and workflow features to function during the COVID-19 pandemic. Hospital stakeholders can contextualize these experiences to improve infrastructure preparedness to disasters.

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In the Lee of the COVID-19 Pandemic: Long-Term Public Health Effects and Lessons for Future Pandemics

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Introduction: The world was not prepared when the coronavirus pandemic hit. The Integrated Health Monitor COVID-19 studies the impact of the COVID-19 pandemic on Dutch population health and well-being since 2021. These results should be taken into account when increasing pandemic preparedness.
Methods: The Integrated Health Monitor COVID-19 contains four main study arms: (1) systematic literature reviews, (2) quarterly and (3) bi-annual monitoring through questionnaires in different target groups, and (4) Primary Care patient registration data. All effects since September 2021 were pooled and assessed for possible effect mitigation options and lessons learned for future pandemics.
Results: The effects of both COVID-19 infection and containment measures on Dutch population health are still present. Two years after the Omicron lockdown in December 2021, the prevalence of post-COVID-19 syndrome was 3,4% (95% CI: 3,0%-3,8%) among adults (26+ years), and there is hardly any recovery in youth mental health. Some effects can still be mitigated by acknowledging the sorrow from the pandemic and strengthening social networks.

Reflecting upon the acute phase of the pandemic shows the focus of the monitoring and advisory activities in the Netherlands on two tracks: (1) infectious disease control and the acute consequences for mental health, and (2) behavior patterns related to COVID-19 countermeasures. Even though some monitoring included mental health aspects (mostly as a predictor of behavior), the pandemic's effects on well-being were underexposed and therefore underemphasized in COVID-19 policy-making for a long time.
Conclusion: Mental health and well-being were negatively affected during the COVID-19 pandemic. This is assumed to be an effect of the containment measures. Therefore, part of pandemic preparedness should be to start monitoring population health and well-being simultaneously with monitoring infectious disease and behavior. Thereby, these aspects can be proportionally weighed and taken into account in policy decisions during an infectious disease outbreak.

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Physician Associate/Assistant Title Demand from The World Health Organization: The Full Circle Feldsher

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Introduction: As global disasters become more frequent1 and healthcare worker (HCW) shortages loom2, the demand for international HCWs increases. These disasters propagate healthcare needs generated freely over geopolitical boundaries, and the global HCW workforce repository desperately needs resuscitation. Civilian and military populations internationally recognize nurses, dentists, pharmacists, and doctors as the majority of global disaster medical response teams in the HCW role. Lack of consistent global identity results in the exclusion of Physician Assistants/Associates(PAs). While the profession offers a unique opportunity to contribute to fulfilling this global HCW need, a globally recognized definition of the PA is urgently needed to augment the inclusion of PAs in responding to these healthcare needs. A loss of title clarity leads to a lack of reference. Since its inception, the PA profession has continued to grow geographically and expand in scope of practice, and its role is a critical component in global HCW response efforts. By obligating the World Health Organization (WHO)3 to officially define and formally recognize the PA title, PAs and PA-like roles functionally assume ownership of a known archetype, solidifying itself to keep pace with international HCW rosters in fulfilling global disaster medical needs.
Methods: Systematic Article Review, word search. Keywords: global; Physician Assistant/Associate; clinical officer; healthcare; shortage; occupation; feldsher; title; classification; paramedicine
Results: Actionable items to support and put into use once this PA Title Authorization takes place would be an international exchange program for starter PA programs worldwide. Title formality develops a consistent framework when discussing special interest groups, international relations, and building organizations. It also conveys a common search term; when others are looking into PA-like roles, they are more likely to find PA. Increasing grammatical coherence captures multiple references under the varying terms worldwide.
Conclusion: Require WHO to formally recognize PA title in the ISCO.3

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Developing a Health Partnership: A Region Östergötland and Rwanda Health Care Collaboration

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Introduction: A collaborative partnership between Region Östergötland (Sweden) and the Rwanda healthcare system was established to facilitate mutual learning and healthcare capacity building. The partnership aims to build capacity in the healthcare system with the goals of enhancing patient safety, knowledge exchange, and professional development within both healthcare systems. Initiated in 2022, the collaboration has involved two visits by the Swedish team to Rwanda and a reciprocal visit by Rwandan healthcare leaders to Sweden, promoting cross cultural understanding and identifying common challenges in healthcare delivery.
Methods: The partnership utilized a participatory approach, with teams engaging in clinical observations, joint workshops, and discussions on healthcare practices. Key activities included structured visits to healthcare facilities in both countries, focusing on areas such as primary healthcare, infection control, and neonatal health. Objectives are outlined for knowledge exchange and capacity building, ensuring a formalized and sustainable approach to the collaboration.
Results: The visits enabled both teams to gain insights into each healthcare system's unique strengths and limitations. Swedish healthcare professionals observed practices that adapted to limited resources, enhancing their skills in critical situations. Rwandan counterparts learned about patient safety protocols and quality improvement methodologies. Additionally, participants identified specific areas for further training, such as delivery of care, pediatric neurosurgery, and training of healthcare personnel working at health posts and primary healthcare centers.
Conclusion: The partnership between Region Östergötland and Rwanda's healthcare system highlights the value of international collaborations in healthcare improvement. By facilitating bidirectional knowledge exchange, the partnership not only bolstered clinical expertise but also fostered a deeper understanding of cultural and systemic healthcare differences. Future efforts will aim to build on these outcomes, focusing on long-term capacity building and expanding the scope of joint training programs.

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Building Resilience Together: An International Collaboration in Designing a Multi-Agency Disaster Tabletop Drill – Insights, Challenges, and Lessons Learned

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Summary: Disaster response often requires complex, multi-agency efforts and brings together responders and leaders from various backgrounds. International response can be complicated by varying clinical practices, lack of coordination, and differing cultures and languages. Tabletop exercises are well-established techniques to improve readiness and coordination in disaster response. In April 2024, an international group of disaster medicine experts from the United States, Canada, and France designed, planned, and facilitated a multi-agency tabletop exercise for the disaster response elements based in Toulouse, France. A structured post-exercise debrief with this team was performed, and distinct themes were extrapolated, including successes, challenges, and lessons learned in designing, planning, and facilitating this tabletop.

Successes in designing and planning the exercise included multidisciplinary collaboration, early coordination with the core planning team, detailed scenario design, the experience of planners, well-timed injects, and good stakeholder participation. Challenges include understanding the capabilities of responding agencies, language barriers, last-minute changes and participation, changing objectives, time zone coordination, and lack of follow up.

Successes in facilitating the tabletop included clarity and design of the exercise, adequate logistics, an appropriate number of participants and facilitators, not deviating from the master scenario events list (MSEL), real-time translation, collaboration from various stakeholders, adaptability and flexibility of facilitators, and a well coordinated emergency operations center. Challenges in facilitating the tabletop included language barriers, facilitators' lack of familiarity with the host country's response system, perceived bias that affected communication, lack of communication method between facilitators, lack of pre-exercise introductions, and post exercise debrief role confusion.

International multi-agency tabletop exercises pose unique challenges. The successful completion of these exercises is dependent on early and comprehensive planning, a thorough understanding of the stakeholder capabilities, clear and concrete objectives, adequate translation capabilities, good pre- and post-exercise follow up, and facilitator flexibility and adaptability.

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Assessing the Impact and Challenges of Emergency Triage and Treatment by MD General Practice and Emergency Medicine Graduates at Tribhuvan University Teaching Hospital During the April 2015 Earthquake in Kathmandu

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Introduction: Nepal, prone to significant seismic events, experienced a devastating 7.8 magnitude earthquake on April 25, 2015, resulting in substantial loss of life and injury. Tribhuvan University Teaching Hospital (TUTH) in Kathmandu, as a central emergency facility, played a critical role in managing disaster casualties. This study assesses the effectiveness of TUTH's emergency triage and treatment response for the 510 earthquake victims admitted on April 25.
Methods: To assess the effectiveness of emergency triage and treatment at TUTH during the April 25, 2015, earthquake disaster and identify key healthcare challenges recorded from this disaster. The Department of Emergency and General Practice led the triage efforts, utilizing the Simple Triage and Rapid Treatment (START) protocol to classify patients: "Red" for critical, "Yellow" for delayed, "Green" for walking wounded, and "Black" for deceased. Triage times averaged less than 60 seconds per patient, and critical cases received immediate care from dedicated medical teams. The study also reviews healthcare challenges experienced in rural settings
Results: The review of work at TUTH showed that GP-led support worked well. Of the 510 initial victims, 38 were triaged as "Red," 136 as "Yellow," 336 as "Green," and 71 were deceased. Over the subsequent 17 days, 1,457 earthquake victims were treated, including 205 critical "Red" cases. Surgeons performed 143 major operations, including 101 orthopaedic surgeries, 22 neurosurgeries, and 18 general surgeries.
Conclusion: Despite TUTH's effective response, post-disaster analyses highlighted broader healthcare challenges in the response and recovery phase across affected regions. The healthcare access was significantly affected, causing major gaps in services due to widespread damage to health facilities, a lack of medical supplies, and difficulties reaching affected areas, leading to increased risks of infectious diseases. Many affected populations faced challenges accessing basic medical care, with the most vulnerable, like children and pregnant women, experiencing severe consequences.

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Hospital Water Contingency Planning for Saltwater Intrusion in the City of New Orleans

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Summary: In September 2023, the City of New Orleans became aware of progressive saltwater intrusion up the Mississippi River, the city's main water source. Saltwater intrusion, a result of global drought conditions and climate change, has increasingly plagued coastal areas globally, causing ill-effects on population health and infrastructure through pipe corrosion, water contamination, and damage to essential appliances. University Medical Center is the largest quaternary hospital New Orleans, a 446-bed hospital serving as the region's only level 1 trauma center, burn center, and hub for the local medical community. In preparation for possible saltwater intrusion, UMC identified water supply contingency solutions

in order to continue patient care throughout the hospital. Reverse Osmosis machines were procured with production capacity up to 1892 L/minute. In addition to tap water filtration, the RO systems are capable of filtering non-potable water supplies including 750,000 gallons (2.84 million L) on-site and an addition 1.5 million gallons (5.69 million L) stored at an off-site location. Finally, an outside vendor was hired to monitor water quality in the hospital and alert hospital administrators once municipal water became substandard. Special considerations were made for services highly reliant on water, including dialysis, dental, laboratory services, sterile processing, pharmacy, and surgery. To continue dialysis services, UMC planned to share capacity with a private service provider (Davita, Inc.) including CRRT machines and storage space for dialysate fluid. The dental team utilized their own water filtration system. A vendor was hired to distribute bottled water as needed. Ultimately, high salinity water never reached the pipes of New Orleans as a result of increased river flow and construction of a sill. However, this overall process serves as a blueprint for rapid expansion of water contingency planning for a major urban hospital.

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The Impacts of Extreme Weather Events on Health Systems: An Overview of Reviews

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Introduction: Extreme weather events (EWEs) have devastating impacts on populations, ecosystems, and critical infrastructure. While their effects on health have been extensively studied, their impacts on the health system are less understood. This study aims to investigate the impacts of heatwaves, cold spells, floods, landslides, and wildfires on the health system, focusing on changes in system performance, alterations in patient flows, and disruptions to infrastructure.
Methods: A systematic review of reviews was conducted using PubMed, Scopus, and Web of Science databases. The search string was developed by combining keywords with Boolean operators. Eligible studies include narrative and systematic reviews (with or without meta-analysis) that address the impacts of selected EWEs on the health system. Only studies published in the last 10 years with full texts available online were included.
Results: Of 2108 retrieved reviews, 668 duplicates were removed, 1286 were excluded after title and abstract screening, and 40 were excluded after full-text assessment, resulting in 114 included reviews. The impacts were categorized by type of event and by the affected health system component–e.g., pre-hospital, hospital (emergency pathway, medical and surgical pathway, outpatient pathway, and day hospital), primary care and elderly care, pharmacies, and public health. The impacts concern infrastructure and equipment, care accessibility, quality, service utilization, surge capacity, and resource availability.
Conclusion: The results of this study provide insights into the expected impacts of EWEs on the health system and suggest actions to enhance preparedness.

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Questionnaire Survey of Dialysis Patients and Medical Professionals Regarding Information Sharing During Disasters

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Introduction: Hemodialysis (HD), an essential treatment for patients with end-stage renal disease, is vulnerable to disasters because it is highly dependent on infrastructure such as water and electricity. During disasters, HD patients occasionally have to be transferred to other facilities where HD is available. In such cases, sharing patient information is critical for medical safety. This study aims to explore the types of information that should be shared among facilities and to investigate common and desired methods for sharing it.
Methods: A questionnaire survey was conducted among medical staff and HD patients at dialysis facilities in Miyagi Prefecture, which was greatly affected by the Great East Japan Earthquake, and subsequently developed a regional clinical information system. Between January and February 2024, questionnaires were sent to all 71 dialysis facilities in Miyagi, with responses collected either in written form or online.
Results: A total of 383 responses from medical staff and 538 from HD patients were analyzed. Patient information is shared in hospitals using electronic and paper medical records, patient cards, dialysis records, data from dialysis machines, and regional collaboration systems. The rate of sharing this information with patients was 45%. Medical professionals prioritized HD-specific information, as well as critical details such as infectious diseases, contraindications, and allergies. Among HD patients, the most common methods for managing their information were medication notebooks, dialysis patient cards, and personal dialysis records. When transferring to other facilities, patients expressed concerns about the accuracy of HD-specific

information and expected information sharing through network systems and Personal Health Records.
Conclusion: This study highlights existing gaps and perspectives in HD patient information sharing during disasters. It underscores the need for standardized protocols and efficient information transfer across facilities to enhance safety and continuity of care for HD patients.
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Saving Lives and the Planet: How Emergency Departments Should Be Cooling Down Their Carbon Footprint

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Introduction: Emergency departments (EDs) play a critical role in healthcare delivery and are contributors to greenhouse gas emissions. As frontline providers of acute care, EDs are uniquely positioned to address the health impact of climate change while also mitigating their environmental impact. Previous research has documented the healthcare sector's overall response to climate change, but specific strategies employed by EDs remain underexplored. This review seeks to fill that gap by collating and analyzing existing data on ED practices aimed at sustainability to combat climate change and reduce their carbon footprint.
Methods: A scoping review was conducted using relevant terms related to emergency departments, climate change, climate resiliency, and mitigation. Papers written in English were included. From PubMed and Embase, 217 studies were found using the key terms. Seven papers made the final data extraction phase. Covidence software was used. A PRISMA model will be included in the final presentation.
Results: Key findings indicate that EDs have started implementing energy-efficient technologies, waste reduction programs, and sustainable transportation initiatives. Some facilities have initiated training programs to educate staff on climate impacts and emergency preparedness in the face of climate-related events. However, the review also identified significant variability in the extent of these initiatives, with many EDs lacking formalized climate action plans. Additionally, there were no nationally unified plans identified for EDs to follow.
Conclusion: The scoping review highlights a growing recognition among EDs of their role in addressing climate change, with promising advancements in sustainability practices. However, the inconsistency in implementation and lack of standardized metrics suggest that more cohesive strategies are needed. To effectively combat climate change, EDs should prioritize developing formal action plans, sharing best practices, and fostering interdisciplinary collaborations that enhance both resilience and sustainability in emergency care.
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Wash Timings for Effective Chemical Decontamination

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Introduction: Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) threats are significant concerns in today's security climate and global instability. It is therefore crucial to be prepared with robust protocols and procedures for effective chemical decontamination. Currently, most hospitals in Singapore use wash timings of up to 15 minutes. However, there has been little evidence to show optimal wash timings for chemical decontamination. If the process is too short, it might not provide sufficient decontamination, or too long, resulting in a waste of resources. This study aims to investigate optimal wash timings during chemical decontamination to ensure efficient yet effective chemical decontamination.
Methods: A total of 20 full-sized mannequins on trolleys simulating derobed patients on trolleys were used. Firstly, a colorless, non-scented, non-toxic gel simulating chemical contamination (Glo Germ®) was applied to the mannequins in a standardized manner - across the head, face, bilateral axillae, front and back torso, groin, and bilateral lower limbs. Ten mannequins were washed by staff for eight minutes each, and ten mannequins were washed by staff for five minutes each. After washing, mannequins were examined using ultraviolet light, with any residual Glo Germ® visible under ultraviolet light. Mannequins without residual traces of Glo Germ® were successfully decontaminated. The total number of mannequins successfully decontaminated was recorded for each wash timing.
Results: Both wash timings (eight minutes and five minutes) resulted in successful decontamination, with no trace of Glo Germ® seen on any of the ten mannequins used for each wash timing.
Conclusion: Both wash timings yielded successful decontamination of all ten mannequins. Using a wash timing of five minutes would maintain effective decontamination, yet save time and water resources during chemical decontamination. This study successfully validated the use of a shorter wash timing, as well as the hospital's chemical decontamination protocols.
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Evaluation of Telehealth Services on Emergency Department Re Attendance Rates

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Summary: Unplanned re-attendance at the Emergency Department (ED) exacerbates hospital overcrowding, strains resources, and raises healthcare costs. In response to these challenges, an audit of post-ED discharge telehealth services was conducted to evaluate its impact on re-attendance rates at a

tertiary hospital in Singapore. This audit analyzed data from the service provided between January 1 and December 31, 2022.

In this initiative, patients were contacted by trained tele-callers within 96 hours of discharge from the ED. Those who answered the call formed the intervention arm while those who did not answer formed the control group. A total of 17,355 ED visits were reviewed, with re-attendance rates within seven and 14 days post-discharge serving as the main outcome. A logistic regression model adjusted for potential confounding variables, including gender, race, age, short-stay unit utilization, ambulance utilization, musculoskeletal conditions, GP referral, abscondment, and previous ED or inpatient admission before the index visit was used.

The re-attendance rate in the intervention group was 74.2 per 1,000 compared to 101.1 per 1,000 in the control group. Patients in the intervention group had significantly lower odds of re-attendance within 3 to 7 days (OR=0.78, 95% CI [0.65, 0.93]) and within three to 14 days (OR=0.84, 95% CI [0.73, 0.98]). Additionally, increased healthcare utilization in the three months before the index visit was associated with higher odds of re-attendance.

The implementation of telehealth follow-up services significantly reduced ED re-attendance rates up to 14 days post-discharge. The findings underscore the vital role of telehealth services in managing hospital capacity by reducing re-attendance, thereby enabling more efficient use of resources. The results from this review support the continued integration as a strategy to optimize healthcare delivery.

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Insights From the PREPSHIELD Project - Preparedness for Society in Health Crises and Disasters

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Introduction: The COVID-19 pandemic revealed gaps in preparedness for large-scale health emergencies, highlighting vulnerabilities within communities and systems. Widespread distrust and skepticism towards innovative tools were common. To better manage future crises, it is crucial to integrate these tools, including information technology and AI-driven solutions, while actively engaging civil society organizations, citizens (especially vulnerable and non compliant groups), policy-makers, and health authorities. The PREPSHIELD project aims to foster a holistic, citizen-centered approach to health crisis management by developing policy recommendations and innovative tools.

Methods: Launched on September 1, 2024, with 13 partners, the PREPSHIELD project will run for three years. It will begin by identifying challenges and best practices from past epidemics and pandemics, focusing on areas such as healthcare response and communication with non-compliant groups. These insights will inform the development of crisis management tools, including a mobile app and an online platform, as well as policy recommendations. These will be tested through tabletop and online exercises at three pilot sites, each representing different scales and levels of institutional trust: the city of Hamburg, Piedmont Region, and Romania.

Results: PREPSHIELD will deliver several key outcomes, including policy recommendations and tools for more inclusive pandemic management. A mobile application will be developed to provide educational content, information, alerts, and polls, while also allowing citizens to report data such as well-being, mental state, concerns, and alerts. This data will be linked to a platform designed to enhance situational awareness and support multi-actor decision making.

Conclusion: By promoting an inclusive and innovative approach to disaster management, PREPSHIELD will enhance pandemic preparedness but also provide insights for other types of disasters. WADEM provides a key platform to share this project and its preliminary findings with a community of disaster practitioners and scholars.

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Improving Exercising for Acting during Crisis and Disasters

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Summary: The actions of medical emergency responders during disasters and crises differ from daily care due to the scale, hectic pace, and the need to cooperate with other emergency services such as the police, fire brigade, and community care. A multitude of choices must be made in a short period to get a grip on the situation. Medical workers generally also have little experience with large-scale crises. This means that skills must be developed and maintained mainly through education, training, and drills. But the time to do that is scarce and is in addition to the requirements to maintain regular medical skills. To develop these skills, training courses have been developed via e-learning in addition to the physical courses. But real-life drills are problematic: they consume a lot of resources in health care organizations, such as ambulance services and emergency departments. Moreover, in the Netherlands, they are not used in working with volunteer Red Cross workers in the day-to-day situation, nor within the disaster organization that the government rolls out. That is why, in addition to physical drills, tabletop applications have been developed, and intensive role plays are used in small group training situations. Serious gaming combined with virtual reality is increasingly used in various places to enhance this package and make it more efficient. This field study investigated what the regions and organizations in the Netherlands are already doing and identified the gaps. A pilot is now a serious game developed, which enables individual care providers to practice working together with other care providers and AI online. This is input for national agreements with the regions to connect the separate initiatives. The aim is to achieve a coherent joint program, which makes the expensive investments possible and keeps the costs for the user low.

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Changes in Disaster Awareness of Hospital Staff Due to the Noto Peninsula Earthquake and Prediction of the Number of Staffs Able to Come to Work in the Event of Disaster

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Introduction: Every year, Mie University Hospital carries out disaster preparedness drills simulating earthquakes. As a part of the drills, a survey is performed to assess disaster awareness of the hospital staff. The aim of this study was to investigate the change in disaster awareness before and after the Noto Peninsula earthquake in January 2024 and to predict the number of hospital staff who can come to work in the event of a disaster.

Methods: A survey was conducted using Google Forms and ask the hospital staffs questions regarding (1) job category, (2) ability to get to work, (3) time required to get to work, (4) disaster response plans in family, and (5) environment and preparedness for "Simulation whether employees can come to work in the event of disaster."

Results: Of 2,276 hospital staff, 1,027 (45.1%) responded to the survey. Compare to 2023, there was a significant increase in the percentages of respondents who had established meeting places and communication methods at the time of a disaster (2023 vs 2024; 41.3% vs 53.1%, $p < 0.0001$) and who had discussed evacuation plans with their families (40.4% vs 54.8%, $p < 0.0001$). The "Simulation whether employees can come to work in the event of disaster" showed that 46.7% (321/688) of staff who responded that to would be able to come to work in the survey were expected to come to work. The reasons for being unable to come to work were "having children" and "lack of transportation."

Conclusion: The Noto Peninsula earthquake raised disaster preparedness awareness among staffs and their families. However, the actual number of staff who can come to work at the time of a disaster is considered limited. To improve the issue, addressing family care needs such as childcare and securing transportation are essential.

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The Effectiveness of Comprehensive Seismic Risk Reduction Programs in Maintaining Hospital Functionality in Earthquake-Prone Regions of the Middle East

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Introduction: Seismic risk reduction strategies are vital for maintaining hospital functionality during and after earthquakes, particularly in the Middle East region, which is known for its high seismic activity. Hospitals must remain operational to provide essential services during disasters. This review evaluates the effectiveness of comprehensive seismic risk reduction programs in enhancing hospital functionality after an earthquake.

Methods: A systematic literature review was conducted, targeting hospitals in earthquake-prone regions of the Middle East. Databases searched included EBSCO, Cochrane, PsycINFO, Scopus, Web of Science, PubMed, Medline, EconLit, and Google Scholar, including cross-sectional, case study, and mixed-method studies published between 2009 and 2024. Inclusion criteria focused on hospitals implementing comprehensive or partial seismic risk reduction programs. Data extraction and quality assessment were performed by three independent reviewers using standardized tools.

Results: Five studies met the inclusion criteria. The findings revealed significant disparities in hospital preparedness and functionality. Structural and non-structural measures, such as retrofitting and staff training, should have been utilized. Hospitals with comprehensive programs demonstrated higher functionality post-earthquake. However, financial constraints, lack of technical expertise, and insufficient regulatory frameworks hindered effective implementation. Mobile hospitals were highlighted as an innovative solution to address capacity shortages during seismic events.

Conclusion: Despite the benefits of seismic risk reduction strategies, significant gaps remain in structural resilience and non structural support systems. Future research should focus on long-term impacts, integration of mental health services, and innovative strategies like mobile hospitals to enhance disaster preparedness and response. Collaborative efforts among stakeholders are crucial to fostering a resilient healthcare infrastructure capable of withstanding seismic threats.

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First Coordinated Emergency Supplies Procurement for Infectious Disease Control (IPC) in the Noto Peninsula Earthquake: Identifying Stakeholders and Pathways in Supply Chains During Initial Disaster Response

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Introduction: During initial emergency response for the Noto Peninsula Earthquake occurred on 1 January, 2024, liaison officers from Division of Infectious Disease Prevention and Control, Ministry of Health, Labour and Welfare (MHLW) were deployed to support to Disaster Infection Control Team (DICT) and faced various barriers to implementing pre coordinated national strategy of supply chains, which has not well described pull-type emergency supplies procurement for Infectious Disease Control (IPC), resulted in organizing new supply chains.
Methods: A descriptive study was conducted based on the reports about IPC supplies procurement between 5 January 2024, when the first MHLW liaison officer from the division was deployed, and 9 January 2024, listing stakeholders including ordering parties, suppliers, carriers, relevant ministries, storage locations/staging posts, and final destinations. Furthermore, the Delphi method with a two-round questionnaire to stakeholders is planned towards identifying the challenges for the pre-coordinated national strategy of supply chains.
Results: By the ninth day of the disaster, ten routes for procuring supplies related to IPC had been identified. Of these, five routes were coordinated with the prefectural government. The MHLW's liaison worked horizontally to connect the various divisions of the prefectural government and urged them to determine who would be in charge, and with the cooperation of MHLW's other liaisons from other divisions. Then, the pull-type route was established on 6 January, followed by DICT's logistic system on January 9th.
Conclusion: Identifying both public and private health supply chains during initial disaster response had reduced disruption in the affected local government in the early stage of the Noto Peninsula Earthquake. In this study, stakeholders and supply chains were listed, and the barriers as challenges to implementation for the pre-coordinated national strategy of supply chains were described, which would contribute to protecting the health and security of disaster victims in future disasters.

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Prehospital First Aid and Response to Mass Casualties at Kitakyushu City Yahata Hospital in Kitakyushu City

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Summary: Fukuoka Prefecture, located in northern Kyushu, Japan, is known for its natural beauty and a long history of international exchange. Kitakyushu City, in Fukuoka Prefecture, developed as a significant industrial hub owing to the establishment of steel mills during Japan's modernization, while also preserving its surrounding natural landscapes. Kitakyushu City Yahata Hospital plays a vital role in disaster response in Kitakyushu's diverse industrial and rural areas. Our hospital is responsible for information gathering, resource allocation, and interagency collaboration in disaster situations. This report reviews the field mobilizations of hospitals and incidents of multiple injuries in 2023.

We retrospectively analyzed all dispatches and patient admissions between January 1 and December 31, 2023. The review includes cases in which our medical staff provided pre-hospital emergency care on-site and instances of multiple injuries and illnesses.

During 2023, there were 12 dispatch requests, with 10 completed requests and two cancellations. Specific incidents included six traffic accidents, two drownings, one factory accident, one rail-related incident, and two rescue incidents in mountainous areas. Additionally, two major incidents occurred: a river drowning involving schoolchildren and a fire at a demolition plant.

Our findings underscore the necessity for Kitakyushu medical personnel to be proficient in prehospital emergency care, particularly given the city's varied geography and industrial landscape. Enhanced training in collaboration with fire departments, factory personnel, railway operators, and airport disaster managers is essential for strengthening emergency response capabilities across diverse settings.

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Enhancing Health Crisis Preparedness in Indonesia Through HEOC Guidelines Establishment with Pentahelix Considerations

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Summary: Effective management of health crises requires coordinated and comprehensive responses. Establishing a health related Emergency Operations Center (HEOC) in Indonesia necessitates unprecedented collaboration due to unique challenges. HEOC Guidelines outline key elements of the pentahelix concept (Government, academics, agencies or business actors, society or community, and the media) for this complex process. Supported by the The Australian Department of Foreign Affairs and Trade (DFAT) thru the Australia Indonesia Health Security Partnership (AIHSP) program, this program aims to strengthen national coordination for responding to health threats, aligning with the Ministry of Health regulations, by ensuring the involvement of Pentahelix components up to the implementation level. Activities include regulatory reviews, development of HEOC guidelines with cross-sectoral representation in selected provinces, public test, tabletop exercise, and field simulation. The involvement of all components of Pentahelix is an important factor in every activity carried out. The initiative, with its Pentahelix approach, has significantly improved engagement, communication, and decision-making among stakeholders. The resulting guidance is the result of cross-stakeholder collaboration in the health

sector. It has promoted equal participation and accessibility for all, including marginalized groups. Through collaborative efforts and adherence to regulations, the development of pentahelix-approached HEOC guidelines in Indonesia has enhanced preparedness for health crises, especially at the subnational level. It fosters coordination among multiple stakeholders while ensuring the inclusion and empowerment of diverse populations.

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Action at the Organizational Level to Strengthen the Response Capacity of Hospital

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Introduction: Japan frequently experiences natural disasters, and there is concern about a major earthquake in the Tokyo area, where more than three million people live. The University of Tokyo Hospital is one of the disaster base hospitals in Tokyo, and strengthening disaster response capacity is important. This study aimed to identify the factors associated with staff behavior towards disaster response.
Methods: Two different surveys were conducted, a paper-based questionnaire for the departments of the University of Tokyo Hospital (UTH) and an online-based questionnaire for individuals. Eighteen departments in UTH were selected for the paper-based questionnaire because they were considered important in determining hospital functions during a disaster. For the online-based questionnaire, hospital staff were recruited for voluntary participation. Each questionnaire was developed based on the previously reported survey conducted earlier.
Results: Out of 18 departments, 17 departments responded to the survey. There was no significant relationship between the preparedness for disaster and the work content of the section. 338 staff responded to the individual survey. Strong trends were observed in many items related to behavior and knowledge of local conditions and disaster response in hospitals. Some background factors, such as age and profession, were significantly associated with respondents' behavior and knowledge. Some barriers were observed consistently across sections and individuals. The three main barriers were: lack of leadership, lack of employee engagement, and heavy workload.
Conclusion: This study identified some factors, both in departments and individuals, that may influence behavior towards disaster response in the hospital. Based on these findings, three actions are considered necessary: vision and mission with effective leadership, commitment through education and training, operational efficiency and human resource management.

Further improvement of disaster preparedness in UTH is necessary at the organizational level.

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Involving Cross Sector to Review and Update Mount Semeru Eruption Contingency Plan in Health Sector Lumajang District 2024

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Summary: The District Health Office (DHO) of Lumajang has prepared a contingency plan for handling the Semeru Volcano in 2015. The eruption of Mount Semeru that occurred during COVID-19 in 2021, which resulted in casualties, losses, and property damage, proves that disaster health management in the Semeru Disaster Prone Area needs to run more effectively. Considering the many challenges and problems faced at that time, like one-stop information provision, accumulation of logistical assistance, public health programs, and management of the Emergency Medical Team, DHO Lumajang decided to update that contingency plan.

Full day discussion activities with the participants were DHO Lumajang, representatives of the district agency for disaster, the public health center, the hospital, the professional health organization, and the social department. This discussion aims to review and update the Contingency Plan of Mount Semeru Eruption 2015 that was arranged by DHO Lumajang.

Organizational structure, risk analysis, scenario development, capacity analysis, policies and strategies, and SOPs are all important components to updates in a contingency plan document. The organizational structure prepared follows the MoH 2023 Health Crisis Management guidelines. Contingency plans are based on scenarios that analyze risks, and the participants decided to use a multi-disaster scenario that occurs during COVID-19. Capacity analysis involves assessing vulnerabilities and capacities at the regional level based on data Semeru Eruption 2021. SOP updates are adjusted to coordination flows and strategy policy for effective preparedness, response, and recovery operations.

Strategy DHO of involving cross-sectors to review and update contingency plans is a good collaboration. Disaster health management policies and strategies continue to develop following regional needs in dealing with disasters. Experience in dealing with various disasters requires the DHO to build collaboration with cross sectors, especially to organize coordination mechanisms.

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Surge Protection: Review of a Hospital-Wide Capacity Level Protocol

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Summary: Hospital capacity is increasingly constrained by outpatient clinic availability, limits on inpatient volume, operative case loads, and rising demand for emergency care. Chronic surge and emergency department (ED) boarding is the new normal. Innovative strategies must meet increased demand and keep hospital-based care, particularly emergency care, available to patients.

At Stanford Health Care, an academic medical center and level I trauma center, licensed capacity is just over 600 beds, but regularly the census surges above 800 inpatients. In response, a team designed and implemented a capacity level protocol, streamlining operations and prioritizing safe care.

This protocol includes clear thresholds and triggers for escalation, subsequent countermeasures - including an escalation to the emergency surge plan - which maintain continuity and preserve capacity for dynamic patient needs.

Protocol development occurred in partnership between the Office of Emergency Management and the Director of Clinical Inpatient Access and Throughput. There was regular stakeholder engagement with leaders from clinical services, including emergency medicine, inpatient medicine, and the interventional platform. It was implemented in 2024 with endorsement from executive and clinical leadership.

There are four capacity levels, followed by activation of the emergency surge plan. The levels escalate from routine through categories with increasing risks to patient care, requiring specific actions: targeted provider communication; focused resources for inpatient discharges; limiting intake from the transfer center; prioritizing ED boarders for beds; rescheduling planned admissions and surgical cases. At level three, leaders meet to discuss countermeasures and escalations. Once at capacity level four, those same leaders consider whether to activate the emergency surge plan. This assembles the Hospital Incident Command System (HICS) and requires accountability throughout the platform and the executive level. It reserves countermeasures, including emergency waivers for hallway beds.

Since protocol implementation, the emergency surge plan has been activated several times, creating immediate capacity and preserving crucial services.

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High-Fidelity, Multidisciplinary, Competition-Based Simulation Tasks in Pre-Hospital Emergency Medical Service

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Introduction: Simulation tasks teams were conducted with each team consisting of a medical doctor, a nurse, an emergency life saving technician, and an ambulance crew certified for rescuer tasks.

Methods: The scenarios were competitive using high-fidelity manikins and standardized actor patients on-site and at stations, called Rallye Medicina.

Results: The current study aimed to evaluate tasks in a Japanese medical rally in 2019 for effectiveness.

Conclusion: Multiple attribute utility technology was used, as the task was intended to achieve multiple goals.

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End-of-Life Care at Welfare Evacuation Centers Following the 2024 Noto Peninsula Earthquake

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Summary: In response to the Noto Peninsula earthquake on January 1, 2024, Welfare Evacuation Centers were established in Ishikawa Prefecture. These shelters are intended to provide temporary refuge and support for individuals requiring physical and psychological care. During this time, we experienced two cases of end-of-life care within the shelter. These cases highlight the practice of end-of-life care in a welfare shelter, a setting that is far from ideal in terms of both medical resources and personnel. One case demonstrated the possibility of providing an acceptable standard of care, while the other revealed various limitations imposed by the hastily assembled system. The successful integration of external volunteers and careful communication with evacuees contributed to the overall success of end-of-life care in the shelter. These experiences suggest the necessity of implementing external support systems to assist on-site medical personnel during disasters. In Japan, where disasters occur frequently, it is crucial to establish unified guidelines for end-of-life care and conduct regular scenario-based training.

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Development of a Mass Casualty Incident Equipment Cart for the Emergency Department

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Introduction: Pre-positioning and maintaining additional critical equipment to manage sudden surges during mass casualty incidents (MCI) is crucial. While specialized equipment carts tailored for critical patients in logistically challenging situations have been shown to improve patient care, such carts have yet to be customized for MCI. This study aims to develop a customized MCI equipment cart (MCI-EC) for use in the emergency department (ED).
Methods: The development of the MCI-EC followed a systematic approach. We focused on road traffic accidents (RTA) with ten casualties based on a study conducted in a similar urban setting, which identified this to be the most common MCI type. The anticipated injury profile was derived from a study on RTA-type MCI, followed by consensus between study members, which specified four airway or facial injuries, four head or cervical spine injuries, three chest injuries, two abdominal injuries, seven extremity injuries, and two thoracolumbar spine injuries. The equipment list was generated regarding published checklists and two rounds of voting by the study members. Finally, the dimensions and arrangement of the MCI-EC were prototyped to prioritize mobility, compactness, and ergonomics within the study ED to ensure practicality in the intended setting.
Results: The MCI-EC was stainless steel and measured 180cm (H) x 47cm (D) x 95cm(W) on 6-inch diameter wheels. Equipment was arranged by treatment tasks comprising monitoring, airway and breathing interventions like intubation, and circulatory interventions like hemostatic dressings, intravenous volume delivery, and chest decompression. A photograph of the MCI-EC and the equipment list are provided as supplementary material.
Conclusion: The MCI-EC was customized for treatment of MCI patients. This study is the first template for MCI-EC in similar settings, and a novel example for further customization in other settings.

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Simulation-Based Training for Healthcare Providers: Assessing PPE Proficiency and Self-Efficacy for Infectious Disease Preparedness in High-Level Isolation Units

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Introduction: In response to the 2014 Ebola outbreak, MedStar Washington Hospital Center established the Biocontainment Unit (BCU) to provide safe treatment of patients infected with special pathogens. Through federal funding for infectious disease preparedness from the Administration for Strategic Preparedness and Response and the Centers for Disease Control and Prevention, the MedStar BCU became one of thirteen Regional Emerging Special Pathogen Treatment Centers in the United States. The Medstar BCU is designed to deliver safe and effective clinical care for patients infected with high-consequence infectious diseases.
Methods: Providers, including physicians, advanced practice providers, and registered nurses, underwent quarterly simulation-based training that focused on donning and doffing personal protective equipment (PPE) including a powered air purifying respirator, coverall, isolation gown, two layers of elbow-length gloves, one layer of examination gloves, foam clogs, and boot covers. All post-training surveys included two primary outcomes related to PPE, and the distributions of these responses were summarized.
Results: 89% of participants were comfortable, very comfortable, or extremely comfortable with donning and doffing PPE, while 11% of participants were still not comfortable after training. Training proctors monitored for PPE breaches. Of 100 respondents, 4 responded that a PPE breach had occurred during training. 87% of participants were comfortable, very comfortable, or extremely comfortable with caring for patients in full biocontainment PPE, however, 12% of responders were extremely uncomfortable or not comfortable. Distributions in post-training comfort level did not vary significantly between training sessions, suggesting that each session had a relatively consistent impact on these two measures.
Conclusion: Simulation-based medical training can increase provider preparedness in high-level isolation unit settings by improving PPE proficiency and self-efficacy. PPE proficiency and competency are integral to the low-frequency, high-consequence events of providing safe care for patients infected with special pathogens.

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An Aging Population Presenting a New Problem to an Irish Emergency Department. Will We Still Need to Meet Them and Greet Them When They Are Over 64?

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Introduction: Medicine is undoubtedly advancing worldwide. New life-saving and life-prolonging interventions improve life expectancy, and population aging continues. World Health Organisation (WHO) data suggests 1 in 6 people will be aged 60 years or older by 2030. A predicted cohort population increase from 12% in 2015 to 22% by 2050. It's unreasonable to assume everyone in this group has the same physical and mental capacity. Scientifically prolonged life increases the potential for health decline. An aging population requires greater resources overall. Ireland's centenarian population increased from 386 in 2016 to 738 in 2023. We aimed to determine trends for presentations aged above 65 to an Irish rural

emergency department over 11 years by examining absolute numbers and percentage of overall presentations.
Methods: A retrospective analysis of automated monthly and annual reports from the electronic system initiation in 2014 to September 2024. Data analyzed in Excel.
Results: Total presentations aged >65 increased annually from 6067 in 2014 to 11849 in 2024. This group was 20.75 % of total attendances in 2014 (lowest), 26.29% in 2020 (highest) (COVID YEAR), and 23.91% in 2024. Although several presentations in 2024 thus far exceed numbers seen at the same time in previous years, the total number of attendees has also risen.

A noted annual increase is present in each decade group above age 65. Nonagenarian presentations were 359 in 2014 (lowest) and 870 in 2024 (highest). Centenarian presentations were 1 in 2015 (lowest) and 25 in 2024 (highest).
Conclusion: The results show presentations aged 65 and older are increasing annually. It is notable that the percentage of total attendances associated with this group is rising, specifically nonagenarians and centenarians. At this trajectory in population demographics, significant planning and resource management will be required to safely and appropriately manage these patients.

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Ensuring Staffing Keeps Pace with Growth in Attendances! Historic Attendance Trend Analysis with Implications for Future Staffing.

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Introduction: Emergency Department (ED) attendances have been growing worldwide for decades, the rationale for this is societal, cultural, and geographically dependent, but has not been described in detail. Increased access to primary care has been postulated as a solution; however, as the number of General Practitioners (GPs) and GP training posts has increased over the last decade in Ireland, so too has the rise in ED attendances. Detailed analysis is required on an ongoing basis to predict the Staff, staff, and space required to appropriately manage the growing cohort of attendances.
Methods: Trend analysis of system-generated attendance reports to evaluate 10 years of attendance patterns (2014-2024) and predict potential future pinch points. Data examined in Excel.
Results: Monthly attendances ranged from a low of 540 to a high of 5028. Average monthly attendance increased from 2657 in 2014 to 4744 in 2024. First month > 3,000 was June 2015, first month > 4,000 June 2021, and first > 5,000 attendances was May 2024.
Conclusion: COVID lockdowns in 2020 and 2021 negatively affected attendance, as did a fire resulting in a hospital evacuation in March 2023. Determining trends in presentations and future predictions is important to ensure that staffing levels match predicted attendances and thus avoid "black escalation" and offload delay. The first time attendances exceeded 3000/month was June 2015, th years later in 2018, every month exceeded 3,000 attendances, and have done so almost every month since, apart from COVID lockdowns, and during fire restricted attendance months in 2023. First month > 4,000 attendances June 2021, and since August 2023, 2 years later, every month has exceeded 4,000 attendances. In May 2024, the first month,> 5,000 attendances occurred. IF predictive models hold in 22 months, every month will be > 5,000 attendances with implications for admissions, bed capacity, ambulance turnover, and more importantly, ED staffing.

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Octogenarian and Nonagenarian Attendances to an Irish ED: A Rapidly Growing and Aging Cohort!

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Introduction: World Health Organization data suggests the Western population is aging and living longer with multiple medical co-morbidities. Octogenarians and nonagenarians have been shown to have longer patient experience times (PET) and longer boarding times in Emergency Departments (ED) than younger patients.
Methods: Automatic system-generated monthly and annual reports were examined from 2014 to 2024 to determine the frequency of attendance of patients in age groups greater than 80 years on a year-by-year basis. Data was examined using Microsoft Excel to determine trends.
Results: ED attendances overall grew from 29,239 in 2014 to 49,560 in 2024 year to date. This represents a 41% rise in overall attendance. 2014 Raw data reveals a total of 2,194 attendances in the over 80 years of age cohort, or 7.50% of overall attendances. This increased to a full year maximum of 4,705 attendances in 2022, comprising 9.78% of all attendances. Year to date, 2024 looks to exceed that figure with 4,610 attendances to November 5th, comprising 9.30% of all attendances. Growth in attendance by over-80-year-old attendees was

52.41%. Over 90- year-old presentations increased from 365 (1.25%) in 2014 to 895 (1.81%) year to date 2024.
Conclusion: ED attendances in general rose over the 11 years examined (41.00%); however, the rise in over-80s attendances greatly exceeded this (52.41%). This cohort of patients is more likely to require additional services such as frailty team, occupational therapy, semi-urgent primary care follow up and transport away from the ED when discharged. A larger proportion of this cohort will also require admission, indicating a growing trend in admissions, also of a cohort likely to have a longer length of stay, with implications for acute bed capacity at a time when capacity overall is constrained.

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Preparing Healthcare Practitioners for International Partnerships: Cultural Competency for Increased Capacity

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Introduction: This study replicates the experiential learning approach developed by Hodza-Beganovic et al. (2021), which focused on enhancing non-technical skills (NTS) for healthcare professionals in preparation for international collaborations. Non-technical skills, such as teamwork, leadership, and cultural awareness, are essential for effective healthcare delivery in diverse settings. This study specifically explores how experiential learning can improve and bridge cultural differences in healthcare partnerships.
Methods: A workshop was conducted in Sweden with healthcare practitioners to strengthen their preparedness for international partnerships. The session incorporated survey-based experiential learning, following an iterative process of individual reflection, small group discussions, and contextualization. Each step encouraged participants to explore cultural competencies necessary for effective communication and collaboration in varied healthcare settings.
Results: Preliminary findings indicate an increase in participants' awareness of cultural differences and communication skills. Participants reported improved confidence in handling cross-cultural scenarios and expressed a clearer understanding of the value of cultural sensitivity in international healthcare settings. Reflections captured from group discussions highlighted the role of structured, experiential methods in fostering open-mindedness and adaptability.
Conclusion: The experiential learning approach shows promise in preparing healthcare practitioners for international collaborations by enhancing their cultural competence and non-technical skills. This workshop format could serve as a model for other institutions seeking to build resilient healthcare teams equipped for global engagement.

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Humanitarian Medical Management Using the Emergo Train System

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Introduction: Healthcare needs from mass casualty events in humanitarian crises require trained personnel to manage complex patient care in challenging environments. Healthcare for humanitarian responses in conflict-affected contexts is characterized by staffing and material constraints, public health risks, mental health challenges, damaged infrastructure, the necessity for coordination between Ministries of Health, NGOs, and other international organizations, and risk to the safety and security of healthcare providers. There is a higher probability of conflict related mass casualty events. To improve preparedness, an adapted training resource was developed using the Emergo Train System (ETS) in collaboration with the International Committee of the Red Cross and Region Östergötland. ETS, an adaptable simulation platform, enables teams to practice managing critical patient flow scenarios, enhancing capability and capacity for patient care in mass casualty incidents in conflict settings.
Methods: The module was iteratively designed based on ETS's validated processes and customized for humanitarian settings. It underwent testing with health care personnel working in conflict settings, incorporating feedback from simulation instructors. Testing involved realistic contextualized scenarios that were easy to use, relevant, and supported capacity building.
Results: The Humanitarian set was used in Ukraine, Nigeria, Yemen, and Somalia, where feedback was positive. The module was reported as highly relevant, easy to navigate, and valuable for capacity building. It improved the ability to perform triage of patients and enhanced healthcare workers' communication and collaboration. Feedback indicated that the simulation supported skill acquisition in decision-making, contributing to a better-prepared healthcare workforce in conflict-affected settings. The set was further improved with roadblocks, military vehicles, religious buildings, and tented structures.
Conclusion: The ETS-based module has proven effective in enhancing the readiness and competency of healthcare providers in humanitarian settings. This collaborative effort showcases the potential of ETS for capacity building, supporting the ICRC's goals of delivering healthcare in crises.

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Business Continuity Plan: Emergency Care in the Time of Crisis

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Summary: The ability of a healthcare entity to serve its community during and after a disaster begins with a foundational indicator: remaining operational. This factor is facilitated by a

business continuity plan in the health service sector, which can be labeled as a health service continuity plan. It is defined as the capability of an organization to continue the delivery of services at acceptable predefined levels following a disruptive incident. An all-hazards approach to emergency preparedness and business continuity planning will allow for flexibility in addressing different types of hazards, but it can also define the specific needs of certain hazards. The objectives for continuity of operations include ensuring the safety of personnel, the performance of the institution's essential functions, protection of assets, minimizing damages and losses, reducing disruptions in operations, and achieving an orderly recovery from an incident. It also includes identifying relocation sites, as well as ensuring that operational and managerial requirements are met before a disaster strikes. The focus in business continuity planning is on the mission-critical functions. This is done by examining the organization's core mandate and whether these functions are vital to delivering services even during emergencies. The goal is to make health systems more resilient to the impact of public health emergencies.

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Beyond the Frontlines: A Holistic Approach to Military Medicine in Sustained Combat

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Summary: There is an adage that says, "The only winner in war is medicine." Many of the greatest advances in lifesaving were born on the battlefield. Recent prolonged, multi-arena conflicts have fostered real-time learning gleaned from comprehensive data analysis from the point of injury through rehabilitation, strategies for managing mass casualty incidents, and the evolution of triage techniques in complex combat situations. Enhancements in hemorrhage control, volume resuscitation, and pain management for conscious casualties driven by detailed data will be explored. So, too, will the development of a specialized identification unit led by military dentists, which has become a global leader in victim identification technologies. Also on the agenda will be the crucial topic of mental health in combat situations. This presentation will challenge conventional wisdom and provide fresh perspectives on lifesaving techniques under the most demanding circumstances.

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Development of Recommendations for Medical Civil-Military Coordination: Initial Policy Findings

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Introduction: Effective civil-military coordination in medical responses remains an underdeveloped yet increasingly vital area of emergency health planning. Despite existing frameworks, such as the Oslo and MCDA guidelines, gaps persist in addressing operational realities between civilian and military medical teams, particularly during public health emergencies. This study investigates and presents the initial policy findings from a structured Delphi process aimed at developing technical recommendations for medical civil-military coordination (MedCivMil), under the World Health Organization's Emergency Medical Teams (EMT) initiative.
Methods: A Delphi methodology was employed to gather expert consensus from a globally representative Technical Working Group (TWG) of 36 specialists across military, civil, and academic sectors. Participants were organized into three thematic subgroups - coordination, cooperation, and medical standards. Each subgroup evaluated a series of policy statements developed through literature review and expert co-chair collaboration. Consensus was defined as ≥80% agreement and/or a median ≥6 with a standard deviation ≤1.4. The process entailed two rounds of anonymous feedback using structured online surveys.
Results: Consensus was achieved on all 41 statements after the second round. The coordination subgroup prioritized principles, planning, task division, and information sharing, with minimal contention. The cooperation subgroup surfaced more complex debates around authority, risk, and trust, requiring significant revision. The medical standards subgroup highlighted the need for ethical consistency, shared clinical protocols, and training across civilian and military actors.
Conclusion: Findings underscore the need for clear operational guidance that supports mutual respect, ethical alignment, and practical interoperability. Joint training, transparent leadership structures, and participative planning were emphasized as critical enablers of effective MedCivMil. The study contributes foundational policy direction to an evolving framework, facilitating future operational and tactical guidelines for emergency medical coordination across civilian and military domains.

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Development of a New Tabletop Game for Mass Casualty Incidents ("MassCas Game") Using the Innovative "Double Diamond" Methodology

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Introduction: Training in mass casualty incidents (MCI) usually requires complex drills and great logistical effort. For years, different teaching groups have used tabletop simulation exercises in training activities to improve response to mass casualty incidents. It is difficult to find affordable tabletop games that fulfill training requirements.
Methods: We used the "Double Diamond" methodology from the innovation field of knowledge. There are four stages: 1) Discovery or identification of needs; 2) Definition, in which we specify the challenges on which we will focus; and 3) Development. Generation of ideas as solutions to the identified challenges and then testing their implementation; and 4) Delivery, in which the designed solution is put into operation.
Results: We identified that there is a need for a tabletop game for MCI to be easy to get. After ten years of using basic and rudimentary tabletop games, we have defined the needs. In a one-year project, we developed the game with the premise of being easily transported and at a reduced production cost. "MassCas" game can simulate many different scenarios (collapse buildings, fires, terrorist attacks, road accidents, rain accidents, mass gatherings, etc), risks (fire, explosion, chemical spills, active shooter, etc), and resources (different types of ambulances, rescue teams, police, etc). We have also developed patients with the possibility to identify life-saving interventions (tourniquet, pneumothorax drainage, and oropharyngeal device).
Conclusion: We have designed a tabletop game that is easy to transport at a reduced cost, adaptable to providers' needs (emergency teams, primary health care teams, etc.), and able to simulate many different scenarios.

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Triage Accuracy of START Method in Traumatic Mass Casualty Incidents (MCI)

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Introduction: In traumatic mass casualty incidents (MCIs), accurate triage is essential for prioritizing care and managing resources effectively. This study assesses the accuracy of the START (Simple Triage and Rapid Treatment) method across different responder variables, including occupation, experience, gender, and unit. Additionally, it compares the accuracy rates for each triage category and the time spent. The study further evaluates the execution rate of critical interventions, such as hemorrhage control and airway opening, which are essential steps within the START method.
Methods: This study utilized AI-generated realistic images of injured patients to create a high-fidelity simulation environment. Participants included physicians, nurses, and emergency medical technicians (EMTs) with varying levels of experience (<2 years, 2-5 years, >5 years) and from different units (emergency department, non emergency, and fire stations). During the simulation, evaluators interacted face-to-face with participants, acting as standardized patients (SPs) to support the triage decision-making process. Participants assessed 30 simulated patients within a 30-minute timeframe, making triage color judgments based on START criteria. Bleeding control materials and nasopharyngeal airways were provided for simulated interventions.
Results: On average, participants correctly assessed 28.04 cases, achieving a mean accuracy rate of 93.71%. The average time spent on triage was 845.28 seconds. Triage accuracy by color category was as follows: green (94%), yellow (96%), red (89%), and black (100%). Analysis by occupation and experience indicated that experienced participants and those in emergency-related roles performed more accurately, particularly in the red and black categories.
Conclusion: This study highlights variability in START triage accuracy based on responder occupation and experience. The use of AI-generated injury images facilitated realistic training, suggesting that such simulations could enhance competency in triage skills, especially in hemorrhage and airway management. Enhanced training for responders from non-emergency units or with limited experience may lead to more consistent triage accuracy and improved MCI response.

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Evaluating the Variation in Interest Enhancement Across Professional Groups Following Disaster Medical Training: A Case Study of the 2024 Hualien County Disaster Medical Team Program

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Introduction: This study aims to investigate whether healthcare professionals from distinct occupational backgrounds demonstrate increased interest in disaster response post-training.
Methods: An anonymous online survey (via Google Forms) was administered immediately following the training sessions. The survey collected data on participants' years of experience, professional categories (physicians, nurses, EMTs, administrative personnel, other healthcare professionals), and self-assessed interest in disaster response both pre- and post-training. Data from 278 participants involved in practical drills and tabletop simulations were analyzed, assessing shifts in interest levels by occupational group. Interest was rated using a 10-point scale, where 1 indicated minimal interest and 10 represented maximum interest.
Results: Nurses comprised the majority of the sample (59.92%). On average, the interest level across all participants increased by approximately 1.1 points. Physicians, EMTs, and nurses initially reported higher interest levels (mean scores of 7.87,7.73, and 7.7, respectively), each averaging about 1 point higher than administrative and other healthcare professionals. Notably, administrative and other healthcare professionals initially recorded lower interest (mean scores of 6.61 and 5.83) but demonstrated a post-training increase of approximately 2 points, surpassing the overall average improvement.
Conclusion: The disaster medical training program was effective in enhancing interest in disaster response across all professional groups, with the most substantial gains observed among administrative and other healthcare professionals. These groups, often attending involuntarily, likely developed a heightened appreciation for disaster preparedness through practical training, which bolstered their confidence and engagement. Such multidisciplinary training initiatives are pivotal in advancing healthcare teams' disaster response capabilities, ultimately strengthening community resilience.

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Success of a Pilot Citizen's Disaster Preparedness Program

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Introduction: Disasters place considerable stress on systems. The role of laypersons in disasters cannot be overlooked. A course was developed by Disaster Volunteer Corps, Singapore General Hospital, for laypersons, focusing on principles of basic disaster management and interventions. The course included scene safety, triage, emergency communications, and basic lifesaving procedures. Emergency physicians supervised emergency medicine residents and trained medical students who conducted the sessions. This paper focuses on the feedback from the pilot conduct of the course.
Methods: The course was delivered over two phases; Phase 1 was delivered online. Phase 2 was delivered in person, culminating in a simulated mass casualty incident. Course feedback was sought through an online form. Descriptive statistics are used to display the quantitative feedback while grouped thematic feedback is presented for free text feedback.
Results: 35 laypersons participated, with 24 providing feedback. Prior to the course, 50% rated their own skills and knowledge as "Poor". Post-course, the majority of them rated themselves as "Good", with a minimum rating of "Acceptable". This shows that the course provided basic knowledge and skills for responding to an MCI.

Participants noted that: i) course objectives were clear; ii) audio and visual aids and doctor-medical student pairs facilitated an effective learning experience; iii) facilitators were "knowledgeable" and provided "useful feedback and advice". The duration of the course was deemed suitable by most participants. Participants also fed back that they would seek opportunities to upskill. The overall rating of the course was high, with all participants receiving either a "Good" or "Excellent" rating. All participants would recommend the course to others.
Conclusion: The positive feedback received and the improvement in the knowledge of participants highlight the success of this pilot program. Given the demand by laypersons keen on applying themselves in basic disaster response, more work needs to be done in refining this course model for future conduct and expansion.

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A Token-Based Methodology for Hospital Evacuation Tabletop Drills

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Introduction: Traditional evacuation drills are costly, disrupt hospital routines, and require significant downtime, making it essential that hospital personnel fully understand evacuation concepts, challenges, and routes prior to full-scale drills. This study presents a novel token-based methodology for conducting hospital evacuation tabletop simulations, which serve as a vital preparatory step before large-scale drills.
Methods: The methodology was tested in eight tabletop sessions at Fundación Cardioinfantil, a leading hospital in Colombia ranked third in Latin America. Participants included area leaders and key decision-makers responsible for crisis

response, ensuring that the exercise closely mirrored the risk of structural collapse during an earthquake.

The simulation begins with a detailed list of patients in the simulated area, including health status information, enabling participants to prioritize evacuations based on medical needs and vulnerabilities. A flow chart guides decision-making, helping participants sequence evacuations to prioritize critical patients while minimizing risks. Architectural plans are also used to identify main and alternative evacuation routes, providing a clear spatial understanding of the hospital's layout.

Participants used tokens representing patients and available hospital personnel (e.g., doctors, nurses, administrative staff) according to actual staffing levels during specific shifts to perform the feasible evacuations. This token-based approach allows participants to identify constraints and visualize challenges such as resource allocation and staff distribution during an emergency.

Results: Feedback from participants highlighted several benefits, including improved insights into patient prioritization, identification of previously unclear evacuation routes, enhanced occupant distribution through different exits, and a heightened awareness of the availability of neighboring resources, such as additional space or staff. Challenges related to resource allocation were also identified, allowing the hospital to address potential gaps before a live evacuation.

Conclusion: This tabletop methodology provides a robust, scalable approach, ensuring critical decision-makers are well prepared before executing full-scale exercises and improving the safety of evacuations in real emergencies.

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Basics in Disaster Medicine

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Summary: Disaster medicine, which can be viewed as a combination of emergency medicine and public health, covers a broad range of topics including blast/penetrating injuries, CBRNE, operational medicine, disaster psychology, event medicine, and humanitarian medicine. This presentation will highlight:

1. The definition of a disaster and common factors in all disasters.
2. The phases and goals of emergency management.
3. Common areas of focus in healthcare emergency management (e.g., surge capacity, security, decontamination, education/training, drills/exercises).
4. The Hospital Incident Command System (HICS) and Cooper University Health Care's modified HICS structure.
5. The hazard vulnerability analysis, emergency operations plan, continuity of operations plan, and 96-hour plan.
6. Surge capacity and how it relates to conventional, contingency, and crisis modes of care.
7. Exercise design and drills.

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Development and Evaluation of a Procedural Curriculum for the Emergency Medicine Residency Program in Yerevan, Armenia

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Introduction: The World Health Organization has identified the development of emergency medicine as a priority. Seven new emergency departments have been opened in major cities of Armenia, but are staffed by non-emergency trained physicians. Thirteen physicians are currently participating in the first emergency medicine training program. Implementation of emergency medicine training programs in other countries has shown a reduction in mortality, and procedural training is central to emergency medicine education.

Methods: The Accreditation Council for Graduate Medical Education (ACGME) specifies core competencies for each specialty in the United States. All residents must complete a minimum of fifteen key procedures essential to the practice of emergency medicine for graduation requirements. There are many additional procedures performed by emergency physicians. A curriculum to teach these procedures to residents in Armenia, either through lecture or hands-on practice, was created. All residents were initially asked to identify how many times they had previously performed a list of 69 emergency medicine procedures.

Results: Before the start of the program, most residents had very little procedural experience and relied heavily on consultant support. At this point in the curriculum, residents have had teaching in many procedures, including incision and drainage, laceration repair, intubation, and several point-of-care ultrasounds. Most reported performing these procedures initially in conjunction with consulting services, and now more independently.

Conclusion: Development of procedural expertise is central to emergency medicine education. This is typically done during lectures, in simulation, and on shift. As this residency program is non-clinical, faculty have relied on a combination of lecture and simulation to support resident learning, in addition to scheduled in-person teaching several times during the program. Nearly three-quarters of the way through the curriculum, residents have incorporated procedures into their practice with the support of consulting services as they grow the scope of emergency medicine in Armenia.

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Evaluating the Feasibility of Using a Tele-Mentoring Model in Performing a Two-Point Deep Venous Thrombosis (DVT) Ultrasound Scan with Novice Sonographers

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Introduction: The use of ultrasound imaging as a bedside diagnostic tool has become widely accepted in emergency departments across the globe. However, the adoption of clinical ultrasound is still fragmented, with this discrepancy being most notable in rural or developing healthcare facilities. This is a feasibility evaluation of a low cost tele-mentoring model to guide non-proficient operators through two-point compression US evaluating bilateral lower extremities for deep venous thrombosis (DVT).
Methods: A convenience sample consisting of six first-year medical students was enrolled in the study. Using a two-way zoom video and audio call, the guiding physician (off-site) directed the participant through the DVT exams by providing instructions on patient positioning, probe placement, image optimization, and venous compression. The exams were evaluated by two ultrasound fellowship trained third-party emergency medicine physicians to validate if the archived images were diagnostic (Yes/No); to grade (1-5 score) the image quality using the reporting guidelines established by the American College of Emergency Physicians.
Results: Six participants were enrolled in the study, with all participants reporting that the instructions from the guiding physician were easy to understand, with a mean score of 9.9/10. All participants felt their ultrasound examination had high diagnostic value, and their experience with the tele-mentoring session improved their ultrasound skills, with means of 9/10 and 9.7/10, respectively. External validating physician 1 scored 50% of the exams as diagnostic with a mean image quality rating of 3.5/5. External validating physician 2 scored 83% of the exams as diagnostic with a mean image quality rating of 3.6/5.
Conclusion: The use of a tele-mentoring model facility diagnostic facilities has potential applications in ad-hoc scenarios such as refugee, wilderness, or warfare medicine. Data from this study provided valuable insight into the role of a tele mentoring model for clinical ultrasound in rural or field emergency facilities.

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Foreign Body Airway Obstruction Resulting in Out-of-Hospital Cardiac Arrest in Denmark - Incidence, Survival and Interventions

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Introduction: Foreign body airway obstruction (FBAO) stands as an important contributor to accidental fatalities, yet prompt bystander interventions have been shown to improve survival. This study aimed to evaluate the incidence, interventions, and survival outcomes of patients with out-of-hospital cardiac arrest (OHCA) related to FBAO in comparison to patients with non-FBAO OHCA.
Methods: In this population-based cohort study, we included all OHCAs in Denmark from 2016 to 2022. Cases related to FBAO were identified and linked to the patient register. Descriptive and multivariable analyses were performed to evaluate prognostic factors potentially influencing survival.
Results: A total of 30,926 OHCA patients were included. The incidence rate of FBAO-related OHCA was 0.78 per 100,000 person-years. Among FBAO cases, 24% presented with return of spontaneous circulation upon arrival of the emergency medical services. The 30-day survival rate was higher in FBAO patients (30%) compared to non-FBAO patients (14%). Bystander interventions were recorded in 26% of FBAO cases. However, no statistically significant association between bystander interventions or EMS personnel's use of Magill forceps and survival was shown, aOR 1.47 (95 % CI 0.6-3.6) and aOR 0.88 (95% CI 0.3-2.1).
Conclusion: FBAO-related OHCA was rare but had a higher initial survival rate than non-FBAO-related OHCA, with a considerable proportion of patients achieving return of spontaneous circulation upon arrival of the emergency medical service personnel. No definitive associations were established between survival and specific interventions performed by bystanders or EMS personnel. These findings highlight the need for further research in this area.

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Introduction of Disaster Medicine Education at Saga University from 2005 to 2024

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Introduction: Disaster medicine education is of paramount importance, and it is essential to train medical personnel who can effectively participate in disaster response. This paper presents a 20-year history (2005-2024) of disaster medicine education at Saga University.
Methods: The education of disaster medicine at Saga University in Japan, including the SINCHI educational model and practical exercises was reviewed. This study was reviewed and approved by the Faculty of Medicine, Saga University (Saga, Japan: IRB approved no. 28-14).
Results: The history of disaster medicine education between 2005 and 2024 was examined, along with civil-military cooperation, multi-professional cooperation, and the practical education model. During the 20 years, the education model consisting of six elements was gradually established. The SINCHI education model includes simulation exercises, group work, international nursing knowledge, general nursing and medical skills and knowledge, promotion of communication

skills, humanity education, and infection prevention and control. The model aims to provide a comprehensive approach to medical education. It covers topics such as creating a list of medical staff members, conducting information-gathering simulations, creating a list of medical instruments, and developing a plan for risk management and operations.

Conclusion: The article discusses the 20-year history of disaster medicine education at Saga University, including the SINCHI education model. Hands-on simulation training is highly instructive and effective, as evidenced by the positive evaluations of participating students.

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Assessment of the Effectiveness of Standardized Patients (SPs) and Mass Cards Simulation (MAC-Sim) in Hospital Functional Exercise: A Pilot Study from Saudi Arabia

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Introduction: Deficiencies in disaster preparedness training for medical staff are noticeable in SA hospitals. A systemic review conducted in 2020 revealed a significant gap in research investigating the use of SPs with simulation exercises in developing countries despite the frequent occurrence of disasters in these regions. This study, which is the first to use standardized patients with MAC-Sim in the Arabic Gulf region, aims to fill this gap and assess the effectiveness of the functional exercise.

Methods: The drill used a mixed-methods approach. Twenty-three volunteers acted as SPs using MAC-SIM cards to record patient signs, symptoms, and physiological parameters. A functional exercise was held on December 19, 2022, at 11 a.m. The scenario concerned a building collapsing; the drill ran for 2.5 hours and focused on the Emergency Department (ED) response, internal communication, and the surge capacity plan.

Results: Precise triage categories characterized the team's performance. The ED team assessed most patients (67%) in under five minutes. For patients requiring definitive care, such as ICU, OR, and wards, 95% spent less than 2.5 hours in the ED. Most patients (65%) required 'other maneuvers' for treatment. The mean score for a realistic scenario was highest among the players (4.625 ± 0.719) compared to the evaluator and facilitator. Importantly, participants' feedback on using MAC-SIM cards during exercise simulations was overwhelmingly positive, with approximately 87% finding them beneficial. The Paramedics (SPs) with prior disaster knowledge and experience outperformed nurses (SPs) in the functional drill.

Conclusion: This groundbreaking study is the first in the Arabic Gulf region to utilize (SPs) with MAC SIM cards in functional exercises. The findings emphasize the potential of simulation exercises in enhancing hospital team knowledge and performance. Pre-exercise orientation sessions can further boost participant readiness and performance. Multiple evaluation techniques can effectively identify participant strengths and weaknesses, informing future hospital disaster improvement plans.

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Building Pediatric Disaster Preparedness: A Mixed Method Evaluation of Disaster Training in Kenya and the USA

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Introduction: The increasing frequency and severity of disasters highlight the need for robust training in disaster response, particularly for medical and public health professionals focused on pediatric care. The Center for Global Health at the Colorado School of Public Health has offered the Pediatrics in Disasters (PEDS) course since 2008 to enhance pediatric disaster preparedness in both domestic and global contexts. This study evaluates the course's effectiveness post-COVID-19 using a mixed-methods approach to assess knowledge gains, learner satisfaction, and impressions across two diverse settings.

Methods: A convergent parallel mixed-methods study design was used to evaluate the PEDS course delivered in 2023 in Nairobi, Kenya, and Aurora, Colorado, USA. Quantitative data were collected through pre- and post-course knowledge assessments, analyzed using paired t-tests and ANCOVA, and satisfaction surveys were analyzed with descriptive statistics. Qualitative data from open-ended responses were thematically analyzed to identify strengths and areas for improvement. Both data sets were integrated to comprehensively understand the course outcomes.

Results: Of the 54 participants, 49 (91%) completed post-course evaluations, and 42 (78%) completed both pre- and post course assessments. Significant knowledge gains were observed, with mean scores increasing from 66% to 82% ($p < 0.001$). Course location did not significantly impact knowledge gains ($p = 0.8$). Learners expressed high satisfaction with the course, praising the interactive components. Qualitative results revealed satisfaction with course content and interactive components, particularly small group discussions and simulations, which learners found engaging and beneficial to their learning experience.

Conclusion: The PEDS course significantly improved knowledge of the pediatric disaster content presented and was well received across both settings. Positive feedback emphasized the course's relevance to disaster response roles, while learners provided valuable suggestions for refinement. Ongoing evaluation and adaptation will focus on knowledge retention and practical application after the course.

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Development of a Global Knowledge Sharing Program to Improve Care of Intimate Partner Violence Survivors

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Introduction: Intimate partner violence (IPV) is a violation of human rights that transcends geographical and cultural boundaries. Each country's approach to this problem is inherently different and fragmented, making it a global public health dilemma. During the COVID-19 pandemic, nearly every country experienced significant increases in cases of IPV and other violent crimes. This highlights the dire need for continued improvements in our policies and procedures regarding victim identification and care.
Methods: Learners from the United States (US) and Japan engaged in a weeklong lecture series covering topics of child abuse, IPV, sexual assault, and human trafficking. The objective of this project was to engage in an open dialogue to compare and contrast each country's judicial and health policies regarding violent crimes. Before and after each lecture session, learners were asked to complete an eight-question self-assessment (1=strongly disagree to 5=strongly agree) evaluating their knowledge of the topics.
Results: A five-day lecture series was presented to 159 learners (68% nurses, 6% social workers, 3% physicians, and 23% others). Survey data demonstrated a consistent post-course improvement in self-assessment of clinical evaluation skills ($\bar{x}$ =3.1-3.7, p=0.0001), case management skills ($\bar{x}$ =2.9-3.4, p=0.0007), awareness of resources ($\bar{x}$ =3.2-3.7, p=0.006), willingness to report suspected cases ($\bar{x}$ =4-4.3, p=0.032), and understanding of a forensic nurses' role ($\bar{x}$ =3.3-4.1, p=0.0001). A decrease in self-reported overall competency was observed after each lecture session ($\bar{x}$ =4.6-3.7, p=0.0001). A majority (58.7%) of learners indicated the lecture series content would change their future practice.
Conclusion: This project was successful in establishing a knowledge exchange between the US and Japan, highlighting key differences in each country's judicial and healthcare procedures while identifying areas in need of improvement. The continuation of similar relationship-building and knowledge-exchange efforts is critical to global efforts in combating IPV and violent crimes to improve community wellness.

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Does the Evidence Exist: Effectiveness of High-Fidelity Simulation Versus Low-Fidelity Simulation on Knowledge and Skill Performance for Resuscitation Simulation Training, a Systematic Review

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Introduction: Resuscitation Simulation-based education plays a vital role in the modern education of medical and nursing students. This systematic review explores the merits of high-fidelity and low-fidelity simulation in medical education, specifically focusing on resuscitation training for nursing and medical students.
Methods: The MEDLINE, CINAHL, EMBASE, and Cochrane Library were searched. The last search was updated in June 2023. Studies were screened according to inclusion and exclusion criteria.

For quality evaluation, the Medical Education Research Study Quality Instrument and the Cochrane Collaboration's Risk of Bias tool were used.
Results: Eleven randomized control trials were ultimately included. The total participants was 796 students (399 High fidelity and 397 Low-fidelity). The majority were medical students. The MERSQI showed a median score of 13 for the included studies; the maximum percentage was 80 %, and the minimum was 67 %. Performance bias exists in all the included studies. On the one hand, six studies (n=374) demonstrated improvement in favour of the HF simulation group. On the other hand, four studies (n=320) failed to show any improvement in skill performance between both groups. One study showed a slight improvement in skill performance at the conclusion. Six RCTs examined knowledge improvement as an outcome, and five (n=332) showed no difference at the report's conclusion. In three (n=235) out of the four studies that examined the retention of skills, performance, and knowledge over different follow-up periods, the results showed no observed advantage of high-fidelity manikins over low-fidelity manikins.
Conclusion: The results indicate that although high-fidelity simulation may have its benefits in areas of skill performance and confidence, it may only sometimes excel over low-fidelity simulation when it comes to acquiring and retaining knowledge and skills.

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Improving Teaching Effectiveness: Using Clips from K-Drama to Train Health Care Professionals for Mass Casualty Incident Response

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Introduction: Singapore is a densely populated nation with a population density of 8207 people/km^2. Khoo Teck Puat Hospital (KTPH) is a 795-bed public acute care hospital that sees over 138,000 patients annually, and must be operationally ready to respond to mass casualty incidents (MCI). This study aims to evaluate the effectiveness of a new teaching method using clips from popular Korean medical dramas to enhance interest, realism, and preparedness for staff, most of whom lack prior training or experience for MCI.

Methods: A 90-minute training session was developed to teach the specific scenarios where department staff may be involved during an MCI. These are a) deployment to the MCI site as part of a Field Medical Team (FMT), b) Hospital decontamination team for HAZMAT incidents, and c) Hospital management of MCI casualties. Key concepts like onsite triage, field management and safety, decontamination indications and techniques, and department MCI protocols were taught. Clips from Korean-drama series depicting realistic scenes from a) building collapse with management of casualties at onsite first aid post, b) hospital decontamination of casualties with chemical injuries after a factory fire, and c) A&E triage, organization, and management of multiple casualties were played.
Results: Sixty-three health care workers participated and shared their anonymous evaluations. 33% had prior experience in MCI training or drills. On a scale of 0-5, the mean self-rated knowledge on MCI response was 2.4, rising to 3.9 after the session. The mean self-perceived level of preparedness was 2.4, rising to 3.8 after the session. All participants found the session useful and effective in preparing them for MCI response, with a mean overall rating of 4.2 for the session.
Conclusion: This new teaching method is simple and inexpensive to prepare and is shown to be effective in training staff. More research may be performed to determine its long-term effectiveness.

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Discuss the Importance of Community People Learning Triage from Perspective of Emergency Medical Services (EMS).

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Introduction: First aid is multifaceted, with one scenario involving mass casualty incidents where multiple patients are injured simultaneously. In such situations, triage must first be conducted, followed by the allocation of appropriate medical resources according to the severity of injuries and the available resources. However, emergency care education in Taiwan rarely addresses this topic, often focusing solely on one-on-one scenarios, leading to a disconnect between education and real-world practice. This study surveys perceptions of mass casualty incidents to explore the importance of community people learning to triage, and then provides scientific suggestions on the design of resilience education for Taiwanese people to jointly build a resilient urban and rural area.
Methods: According to the medical treatment process of injured and injured patients, it can be divided into three stages: first aid/first response, ambulance transfer, and medical treatment in the hospital. Therefore, this study focuses on "Community people", "Civilian rescuer", "Emergency medical practitioners (including fire department)", and "Hospital medical staff" are the research objects for which questionnaires are distributed. Then use Standard deviation, One-way ANOVA, Scheffe's method/Tukey's range test to analyze and obtain key information.
Results: The study found that all four groups agreed that courses on "first aid education under 39 hours" and "disaster preparedness education" should include triage training. Additionally, the study found that hospital-based medical personnel and emergency medical practitioners believe that community members with basic first aid training, volunteers of disaster response teams, and community leaders should learn triage, rather than requiring everyone to learn it.
Conclusion: This study suggests that triage training should be included as an extension/supplementary course in disaster resilience education or as part of continuing/in-service education. Give priority to those who already have first aid knowledge and disaster prevention teaming skills to improve their survival rate and resilience in emergencies.

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An Immersive Austere Environment Pediatric Disaster Simulation to Improve Pediatric Disaster Response for a Multidisciplinary Group of Disaster Medicine Fellows

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Introduction: Austere environment disaster response poses situations and challenges, many child-specific, that differ from disaster response in routine and well-resourced practice settings. Pragmatic and ethical considerations limit feasibility of including children in live disaster drills, especially in an austere

environment. As part of the Beth Israel Deaconess Medical Center (BIDMC) Disaster Medicine Fellowship's (DMF) annual 4-day immersive austere environment Pre-Deployment Course a large-scale simulation drill with pediatrics was conducted.
Methods: The Pre-Deployment Course was conducted on private undeveloped property and on the adjacent State Reservation. The 4-day course focused on preparation for and response to a catastrophic flood in a rural agricultural area of a developing country with poor infrastructure. Participants stayed in tents and ate mostly MREs. The hybrid adult live actor, pediatric low fidelity manikin simulation required our multidisciplinary group of fellows to set up their pop-up field clinic; triage 40 pediatric victims; and fully evaluate and manage 6 pediatric victims. Hot wash was conducted immediately after the simulation and cold debrief 1 month after to identify strengths, gaps, and patient care and personal challenges of austere environment disaster response.
Results: The simulation engaged 9 fellows and 3 guest trainees; 7 faculty ran the simulation, 8 faculty acted as adolescent patients and/or caregivers. The simulation scheduled for 2 hours was terminated at 96 minutes when predesignated endpoints were met. Hotwash and 1-month cold debrief identified austere environment pediatric disaster response considerations and challenges including: vulnerabilities; medical, psychosocial impacts; evaluation; management; logistics; and patient, caregiver, and responder ethical and moral hazards. All trainees supported inclusion of pediatric simulation in future courses.
Conclusion: The experience provided team building, technical performance training, psychosocial stress preparation and management training for disaster response in the austere environment. The simulation planning, design, scenarios, and debriefs provide a toolkit for including pediatrics in other austere environment disaster training.

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Evaluating the Effectiveness of CBRN Training Modules Across Various Profession Groups

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Introduction: In line with the importance of being prepared against CBRN threats in the modern world, the impact of customizing training according to professional groups on participants' knowledge and skill levels was examined. This study aims to evaluate the effectiveness of CBRN (Chemical, Biological, Radiological, and Nuclear) training modules specially designed for different professional groups.
Methods: The research was designed as a quasi-experimental study with a pre-test and post-test design. A total of 271 individuals from five different professional groups—physicians, auxiliary health personnel, search and rescue personnel, auxiliary search and rescue personnel, and students—who received training from the SBÜ CBRN Training and Simulation Center participated in the study. Before and after the training, tests consisting of 25-30 multiple-choice questions were administered to measure knowledge and awareness levels regarding CBRN. The tests were evaluated out of 100 points, and those who scored 50 points or above were considered successful.
Results: In evaluations conducted before and after the training, a statistically significant increase was found between the pre-test and post-test scores in all professional groups and genders. A statistical difference was found between professional groups in terms of pre-test scores; particularly, it was determined that the pre-test scores of auxiliary search and rescue personnel were lower than those of other groups, but they showed the highest score increase after the training.
Conclusion: Customizing training according to professional groups enhances its effectiveness and better responds to participants' professional needs. In the future, optimizing training programs based on participant feedback, more frequent use of advanced technologies (AR and VR), and the integration of psychological resilience training may further increase the success of the training. It is recommended that training programs be updated at regular intervals and that content specific to professional groups be developed.

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The Importance of a Standardized Handover Procedure for Effective Disaster Relief in Affected Areas

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Summary: Peace Winds (PW) is an international NGO that provides humanitarian aid to people facing crises worldwide. ARROWS (Airborne Rescue and Relief Operations With Search), a part of PW's project, supports victims of man made and natural disasters. On January 1, 2024, the Noto Peninsula in Japan suffered a magnitude 7.6 earthquake. During that time, the PW staff and rosters (registered members) were dispatched to the affected area to provide disaster relief.

This study aims to discuss the importance of a standardized handover process during humanitarian aid and identify the potential improvements to enhance effective disaster relief activities from the rosters' perspective for future catastrophes. During the initial relief efforts, the PW staff and the rosters started gathering accurate information, evaluating the victims' needs, and planning the next steps. However, due to the ever-changing nature of the situation, they needed to adapt to different tasks, which changed day by day. The rosters working on the next phase recognized the need to establish a standardized handover procedure to delegate responsibilities to later-joining rosters effectively. This structured handover process provided a clear overview of the relief efforts to the rosters involved at different times and for different durations.

While the handover procedure was successfully created during this response, it could have been further optimized if it had been introduced from the onset of the activities. Thus, the handover process should be discussed in advance between the PW staff and the rosters during preparatory training. This approach may also apply to other organizations with similar personnel structures.

An efficient handover process is crucial for disaster management. By discussing responsibility delegation and simulating the handover procedure during preparatory training, cooperation in the actual humanitarian activities could be optimized.

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How Can We Make Sure that Disaster Management Training Fits Their Purpose?

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Summary: The Sendai Framework for Disaster Risk Reduction 2015-2030 emphasizes education and training as essential elements for disaster risk reduction. However, recent studies have highlighted significant variability in disaster management (DM) training curricula, methodologies, and evaluation practices. A recognized issue within DM capacity-building programs is the lack of scientifically sound monitoring and evaluation (M&E). The M&E process serves two main functions: an internal function focused on quality assessment and continuous improvement of the course, and an external function related to outcome reporting and performance evaluation. Given the relatively low frequency of disasters, most responders experience real events infrequently, making effective training and M&E crucial to ensure they are prepared to perform optimally when disasters occur. DM training programs encompass a broad range of topics, from clinical medicine to management, and employ various instructional methods, including e-learning, traditional lectures, and simulations. This complexity complicates the M&E process. Additionally, evaluating DM training outcomes during actual disasters is nearly impossible due to the numerous factors that influence response effectiveness. Most educational programs in general medical education and DM training struggle to demonstrate a clear connection between training activities and desired outcomes. Organizers often only report on the number of individuals trained, participant satisfaction, and knowledge gains. This M&E approach is suboptimal because it analyses only limited aspects of the educational process and overlooks the complex, dynamic processes within the programs. Consequently, a high-quality, validated M&E process, deliberately designed to address the complexity of DM training, should incorporate a variety of evaluation methods, including formative assessments and summative assessments, incorporating both qualitative and quantitative data. A comprehensive M&E framework has the potential to improve the course itself, improve its learning outcomes, and ensure all stakeholders of a trustworthy educational process.

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Bridging the Gap: A Simulation-Based Approach to Teaching Planetary Health in Emergency Medicine Residency

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Introduction: The integration of planetary health into medical education is increasingly recognized as essential for training future physicians. However, existing educational efforts primarily target medical students, leaving resident physicians with limited training in addressing the health impacts of environmental stressors. This study aims to evaluate the effectiveness of a simulation-based curriculum in enhancing Emergency Medicine residents' knowledge and confidence in discussing these health challenges with patients.

Methods: A cohort of Emergency Medicine residents at Johns Hopkins Hospital will participate in simulation sessions designed to address planetary health topics. Participants will complete pre- and post-session surveys using Qualtrics to assess changes in their comfort levels when discussing environmental health issues. Data will be analyzed using descriptive statistics, including chi-square and Fisher's exact tests, to evaluate the primary outcome of increased confidence in discussions with patients. The study will take place from September 2024 to June 2025.

Results: Expected outcomes include a significant increase in the proportion of residents reporting comfort in discussing health challenges driven by environmental stressors post-simulation. Secondary surveys will be conducted six months after the sessions to assess retention of knowledge and confidence.
Conclusion: This study will provide insights into the efficacy of simulation-based education in enhancing resident training in planetary health. By addressing this education gap, we aim to empower residents to adopt a more holistic approach to patient care, integrating environmental factors into their clinical practice. The results could inform future curricular developments in medical training programs nationwide.

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Strengthening Disaster Preparedness in India: A Virtual Tabletop Exercise on Earthquake and Train Derailment Response for Emergency Medicine Training

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Introduction: India ranks third among 193 countries for disaster vulnerability, according to the World Risk Report (WHO, 2024). Various natural and man-made disasters have impacted the country, including floods, cyclones, droughts, earthquakes, and train derailments. These events pose significant challenges to emergency healthcare systems. The Ronald Reagan Institute for Emergency Medicine at George Washington University, with longstanding partnerships across 18 institutions in India, focuses on delivering emergency medicine (EM) education and training. The curriculum includes a disaster management tabletop exercise to simulate responses to two case scenarios: an earthquake response and a train derailment.
Methods: A virtual tabletop exercise was conducted via Zoom. The earthquake scenario involved three teams simulating collaborative disaster response through cluster meetings with global agencies. The train derailment exercise engaged participants in three teams: a pre hospital response group, an adult ED team, and a pediatric ED team. The prehospital team focused on rapid triage, while the ED teams managed patient flow and limited resources. Instructors acted as the incident command center, coordinating response efforts across teams. This was developed in accordance with the WHO EMT minimum standards for disaster training.
Results: Of approximately 60 participants per session, 23 provided feedback (16 from the earthquake case and seven from the train derailment). Participants found the scenarios highly engaging, realistic, and relevant, valuing the stepwise approach to disaster response while encouraging critical thinking, especially in triage and resource management. After the post-survey, participants reported that the training significantly improved their response during a real train derailment in Delhi, underscoring the exercise's practical value.
Conclusion: India's vulnerability to diverse disaster types necessitates ongoing and scalable disaster preparedness training. These tabletop exercises underscore the importance of low-cost training tools to equip healthcare providers for effective disaster response at scale. Future steps include expanding the scope of these exercises to more disaster scenarios and further integrating local resources.

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Comparing Succinylcholine with Rocuronium for First-Pass Success During Rapid Sequence Intubation at an Academic Emergency Department

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Introduction: Succinylcholine and Rocuronium are the principal neuromuscular blocking (NMB) agents used for rapid sequence intubation (RSI). Previous studies comparing the two agents show controversial results. A Cochrane systematic review revealed that Succinylcholine was more likely to achieve good intubating conditions than Rocuronium. This study aimed to compare Succinylcholine (1.5 mg/kg) versus Rocuronium (1.2 mg/kg) and their association with first-pass success during RSI.
Methods: This was a retrospective study at a single academic emergency department. We included patients who underwent RSI with either Succinylcholine or Rocuronium between 2017 to 2021. The primary outcome was first-pass success, whereas the secondary outcome was clinically acceptable intubation conditions. Logistic regression analysis was used to compare both agents.
Results: This sample included a total of 342 patients. Of whom, 201 (58.7%) patients received Succinylcholine and 141 (41.2%) received Rocuronium. Unadjusted comparison between Succinylcholine and Rocuronium revealed no difference in first-pass success rates (84.3% vs. 82.9%; p= 0.23) and had similar clinically acceptable intubation conditions (89.9% vs. 88.3%; p= 0.19). After adjusting for confounding factors, first-pass success rates (p= 0.22) and clinically acceptable intubation conditions (p= 0.19) remained similar between the two agents.
Conclusion: The use of 1.5 mg/kg of Succinylcholine compared with 1.2 mg/kg of Rocuronium revealed statistically similar first pass success rates and clinically acceptable intubation conditions.

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The Effectiveness of Incident Command System (ICS) Approach in Building Disaster Resilience of Health Care Facilities: A Scoping Review

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Introduction: Indonesia is a country that is vulnerable to natural, non-natural, and social disasters. The Indonesian Health Law mandates that health facilities have a hospital disaster plan document to increase disaster resilience. The Disaster Management Agency uses the command system approach (ICS) in disaster management for more efficient task distribution in the disaster response phase. The objective is to conduct a review of disaster plan documents prepared using ICS to effectively form disaster resilience.
Methods: This study is a scoping review, articles were obtained from the search process in the PubMed database and, Portal Garuda. The inclusion criteria for articles are English and Indonesian literature, published from 1997-2023, quantitative and/or qualitative research with a research population in the form of health service facilities or health workers working in health service facilities, and the full article can be accessed. Gradual screening was carried out and documented according to the PRISMA flowchart. The screening articles were assessed for validity, and article extraction and synthesis were carried out manually.
Results: In the screening process, twelve articles were obtained. The resilience of health facilities is mostly assessed using the hospital safety index instrument, with the command system component as one of the components assessed. Several articles continue the assessment using HSI with in-depth interviews.
Conclusion: The ICS approach is effective in disaster management within healthcare facilities and is recommended to be used in the organization of healthcare facility disaster management teams. Gadjah Mada University actively advocates to the Ministry of Health, Provincial and District Health Offices, as well as healthcare facilities in Indonesia, to use this approach in the development of their disaster management structure as part of their institutional contingency plan for health crisis management.

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Comparing Learning Outcomes in Cardiopulmonary Resuscitation (CPR) Basic Life Support Training for Self-Training Video with Learning Feedback and Traditional Onsite Training in Running Race Population

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Introduction: Sudden cardiac arrest (SCA) can occur during running events, and immediate and effective CPR significantly improves survival. Training race participants in basic life support (BLS) could potentially increase survival chances during these events. Online learning may improve access to BLS training by reducing instructor, travel, and organizational costs. While online video training alone may not fully replicate in-person learning, this study explores a refined online training model with online platform feedback. This study aimed to compare CPR performance, knowledge, and confidence scores in traditional onsite training vs. self-training video with learning feedback as an alternative method for teaching BLS.
Methods: Runners were invited into the study and selected between two BLS training methods:traditional face-to-face training (F2F) or self-training videos and online learning feedback (VDO). CPR training dummies were sent to parks and running groups for the VDO group to use. Both groups were evaluated for CPR performance by certified BLS instructors. Knowledge and confidence scores in BLS were collected by questionnaire and compared before and after training.
Results: 161 participants were in the VDO group and 577 in the F2F group. 88.2% and 93.2% of VDO and F2F groups achieved BLS competency (p value=0.25). Knowledge and confidence scores increased significantly in both groups. Although increased, the increase in scores for knowledge in the VDO group had an odds ratio of 0.5 (95% CI: 0.34, 0.74, p-value of 0.001), and in having confidence for assisting unconscious patients an odds ratio of 0.33 (95% CI: 0.22, 0.5, p-value of <0.001), compared to the F2F group.
Conclusion: Self-training videos with learning feedback achieved competent BLS skills in 88% of runners and improved knowledge and confidence in performing basic life support, but to a lesser extent than onsite training. Such a method could potentially be used to increase BLS training in runners.

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Development and Early Experience of a US-Based Pediatric Disaster Science Research Training Program

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Introduction: Children are often overlooked in disaster planning and response. Children are particularly vulnerable in a disaster, and their outcomes may be quite different from adults. Pediatric disaster research faces significant challenges in methodology and infrastructure, often relying on limited,

non-representative, and non-generalizable data. To advance this field, there is a critical need to train future disaster scientists who can develop research-informed solutions that advance the entire spectrum of the disaster cycle. We developed a curriculum that responds to the need to increase the number of professionals trained to perform pediatric disaster science research. This program was developed in collaboration with the HRSA-funded Pediatric Pandemic Network (PPN).

Methods: A consensus-driven pediatric disaster medicine research curriculum was developed using expertise from the PPN. Pediatric disaster medicine experts agreed to lead educational sessions in conjunction with program faculty. A diverse group of participants was recruited for the 2024 cohort to spend 10% of their time attending interactive Zoom educational sessions, individual mentoring sessions, developing a capstone project, and attending the PPN annual meeting to meet potential national mentors.

Results: Eighteen applicants were accepted from 15 different states. 1/3rd of applicants were underrepresented in medicine. Accepted scholars represented emergency medicine, critical care medicine, surgery, hospital medicine, and epidemiology. We included a feedback loop in our curriculum that led to the addition of an implementation science session, analysis of an early-stage investigator's disaster-specific grant proposals, sessions on QI, health services research, and other topics using disaster science research examples.

Conclusion: To our knowledge, this disaster science research training program is the first of its kind in the US. To increase sustainability, we have submitted an NIH application to continue to fund this program from 2026-2031.

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Are We Prepared to Care for The Children? An Assessment of Pediatric Specific Pre-Deployment Training Provided by Non-Governmental Organizations Operating in Disaster Zones

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Introduction: Children face unique vulnerabilities during crises, necessitating specialized care. This study aims to assess the adequacy of pediatric-specific pre-deployment training provided by non-governmental organizations (NGOs) operating in crisis zones.

Methods: To identify NGOs active in disaster response, a list of those that responded to the 2023 Turkey-Syria earthquake was selected from Charity Watch's top-rated NGOs in the International Relief & Development category. A comprehensive analysis of their public websites was performed, and NGOs were contacted for information on pediatric-specific training. Response rates and the content of training offered were analyzed to evaluate the current state of pre-deployment training.

Results: Twelve of the twenty-three (52.1%) NGOs examined responded to inquiries. Among the responding NGOs, only one (12.5% of respondents) offered any pediatric-specific training. The sole NGO that provided such training sets a baseline minimum requirement for clinical staff to hold both pediatric and neonatal life support certificates (or equivalent). Furthermore, staff receive mandatory training on child safeguarding, as well as Integrated Management of Neonatal and Childhood Illness training. Other non-pediatric-specific courses, such as Personal Safety and Security, Psychological First Aid, and Hostile Environment Awareness Training, are also offered by this specific NGO.

Conclusion: This study underscores the critical need for standardized and comprehensive pre-deployment training for healthcare personnel in disaster zones, with a particular focus on pediatric care. NGO responses and practices revealed inconsistencies in training content, strategies, and programs, emphasizing the need for greater transparency. Establishing best practices and collaboration between NGOs, healthcare experts, and authorities is vital to ensure the effective care of pediatric patients in disaster zones.

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Attitudes Toward Routinely Recommended Vaccines Among Hawaii Parents Following the COVID-19 Pandemic

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Introduction: This study aimed to assess changes in attitudes toward routinely recommended vaccines among Hawaii parents following the COVID-19 pandemic and to identify associated factors influencing these changes.

Methods: An online survey was conducted in March 2023 among parents/caregivers of children aged 0-12 years residing in Honolulu, Hawaii. Data collected including sociodemographics and household characteristics, theoretical constructs of the Health Belief Model, emergency preparedness behaviors, risk perception of diseases, and attitudes toward vaccines. Descriptive statistics were used to assess parental vaccine attitudes, logistic regressions were employed to identify factors associated with changes in attitudes regarding routinely recommended vaccines (vaccines other than the COVID-19 vaccine).

Results: Participants (N=278) were mostly female (84.2%), college-educated (68.3%), food-secured (66.5%), and possessed an emergency preparedness kit (50.7%). Attitudes toward routinely recommended vaccines remained unchanged in 65.1% of participants (60.1% positive, 5% negative), while 34.8% reported changed attitudes (21.9% changed to positive; 12.9% changed to negative). Multivariable logistic regression revealed that factors that influenced changes in vaccine attitudes included race/ethnicity, having a family emergency plan,

concerns about climate-related health impacts, perceived time barriers, and the belief that vaccines are part of emergency preparedness plans. Specifically, individuals identifying as Japanese or Filipino, those with an emergency plan, and those less concerned about climate change were less likely to change to negative vaccine attitudes. Conversely, perceiving vaccines as unrelated to emergency preparedness and experiencing time barriers were associated with an increased likelihood of changing to negative attitudes.

Conclusion: This study highlights how attitudes toward routinely recommended vaccines shifted among parents after the COVID-19 pandemic, and identifies modifiable factors such as concerns about climate change, time barriers, and the perception that vaccines are unrelated to emergency preparedness. Insight gained from these findings can guide targeted public health interventions aimed at enhancing vaccine acceptance and readiness in advance of future potential pandemics.

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Measuring the Effectiveness of Emergency Medical Team Deployments in Disaster Response: A Data-Driven Approach

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Introduction: As natural and man-made disasters increase in frequency and intensity, the demand for effective disaster response challenges healthcare systems globally. The deployment of Emergency Medical Teams (EMTs) and their field hospitals, classified by the World Health Organization, is essential. EMTs provide life-saving care and are vital components of the global health workforce. While they alleviate the burden on overwhelmed healthcare systems, EMT field hospitals face significant physical and logistical challenges due to limited resources, leading to inefficiencies. Currently, there is no standard evaluation for EMT deployments. This research aims to establish and validate a framework for assessing EMT effectiveness in disaster scenarios to address deficiencies and improve preparedness.

Methods: A mixed-methods approach was used to construct the tool. Initial Key Performance Indicator (KPI) domains were derived from a literature review and refined through 20 expert interviews and a modified Delphi process. KPI domains meeting a ≥75% consensus threshold were included. The finalized tool, composed of six KPI domains, was developed into a digital application with real-time dashboard functionality. The tool was piloted in a full-scale simulation of a Type-1 mobile EMT deployment responding to a simulated outbreak.

Results: Six validated KPI domains formed the tool's core: Deployment & Operational Readiness, Clinical Service Delivery, Needs & Capacity Assessment, Staffing & Human Resources, Equipment & Logistics, and Coordination & Communication. The pilot yielded a high overall performance score (4.52/5), with the highest ratings in deployment readiness and clinical services. Perceived elements (e.g., safety, teamwork, well-being) correlated strongly with perceived effectiveness but showed a statistically significant gap when compared to objective performance scores ($p < 0.05$). Qualitative feedback highlighted the tool's utility but raised concerns about the data collection burden during real-time deployment.

Conclusion: The development of the proposed framework will mark a substantial advancement in ensuring that field hospitals not only function with maximum efficiency and effectiveness but also incorporate evidence-based practices in diverse disaster responses for shaping future preparedness and improving healthcare system adaptability during crises. In future research, a case-control interventional study will be conducted with WHO-classified field hospital teams across the European region to validate the tool further.

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Disaster Response Field Simulation as Part of the Midwive Curricula to Improve the Development of Specialized EMT for Maternal and Child Health

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Summary: In 2018, Palu City in Central Sulawesi Province suffered a tsunami, an earthquake, and liquefaction. Based on the experience, the local Health Polytechnic added disaster health management to its curriculum. However, only in 2023 were they able to organize field simulations as part of the curriculum, especially for the midwife study program, as Indonesia has the second-highest maternal mortality rate, with two deaths per hour among ASEAN countries.

This field report employed an observational descriptive approach, with the authors serving as resource persons and facilitators who were actively involved in the field simulation organized by the Palu Ministry of Health Polytechnic of Applied Midwifery Study Program. The simulation scenario was an earthquake similar to the 2018 disaster event in Palu City. It was simulated that when the disaster occurred, the local community contacted the midwife at the health center, and they would immediately respond with the students using the integrated ambulance system to the disaster location and form a specialized EMT. After the classroom simulation and field simulation, students were able to understand and directly apply the disaster management paradigm in real situations by using MISP as part of the technical subject in the simulation.

Lessons learned from the study involved 153 midwifery students and 10 midwives in the areas of two Health Centers, Mamboro Health Center and Talise Health Center, in North Palu Sub-district. Participants simulated emergency disaster response operations, developed response maps, formed a

specialized EMT for Maternal and Infant Health, organized sub-cluster meetings, and prepared a draft of the health contingency plan for health polytechnics with an inter-professional educational approach between the departments of Nutrition, Nursing, and Environmental Health. The impact of this exercise is an example of best practice for the improvement of future health care workers' curriculum development in the other 28 health polytechnics nationwide.

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Feasibility of Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) among Non-compressible Torso Hemorrhage Patients in Limited Resource Situation

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Introduction: Currently, Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) is gaining prominence over time as adjunctive management for Non-Compressible Torso Hemorrhage (NCTH). However, in resource-limited situations, such as disasters, there is still relatively little information about this procedure.

This study intended to determine the feasibility of REBOA in NCTH patients, factors related to survival, the following complications, and the feasibility of performing the procedure with limited resources.

Methods: 23 NCTH patients treated with REBOA without fluoroscopic machine confirmation of the balloon position in the ER at the Trauma Center Khon Kaen University, were retrospectively reviewed from 2012 to 2013. The ascertained survival rate after the procedure and 28 days of mortality are the primary outcomes, while associated factors and complications are secondary outcomes.

Results: Among NCTH patients undergoing REBOA, the survival rate after the procedure was 26.09% (n=6), and 28 days afterward was 21.74% (n=5). There were significant differences in the Glasgow Coma Scale (GCS) scores upon arrival between the survival group (SG) and non-survival group (NSG) after the procedure. The median GCS was 11 for the SG and 3 for the NSG (OR 1.76, p=0.024). At 28 days, the only statistically significant results were found in the GCS range of 10-12, with 3 survivors (75.00%) versus 3 non-survivors (15.79%) (OR 16, p=0.035).

10 patients experienced prehospital CPR (43.48%) but did not survive. 7 patients underwent CPR during REBOA, one of them stayed after the procedure but died 28 days afterward. The complications were bleeding 65.22% (n=15), and acute kidney injury 21.74% (n=5).

Conclusion: Among NCTH trauma patients undergoing REBOA, approximately a quarter had survived after REBOA and primary operative procedure, and slightly lower at 28 days after injury. This procedure can be safely performed by an experienced surgeon under a limited resource situation.

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Do Disaster Drills Impact Real Time Patient Care in the Emergency Department?

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Introduction: Disaster drills, such as Mass Casualty Incident (MCI) are complex events which require many resources in the crowded Emergency Departments (ED). Previous studies were done in paediatric ED's and did not demonstrate any effect on patient care. In our novel research, we aim to describe, for the first time, the impact of disaster drills on a large referral Adult ED and the different impact of planned and surprise drills was never studied.

Methods: A retrospective study, examining electronic medical records of patients over the age of 18, who visited the ED during documented drill sessions between 2017-2023, in comparison to a control group consisting of visits at the same hours, one and two weeks before and following the drill. Variables such as triage levels, time-to-triage, time to-physician, re-admission rates, and mortality were examined, while further differentiating the impact of surprise and planned drills.

Results: The research group consisted of 585 patients, and the control group 2447, with similar characteristics for all patients. Out of eight drills that took place, four were surprise drills and four were planned. Time-to-admission on the planned drills was shorter. Average time-to-triage was significantly longer in the general research group and even longer in the research group in the surprise drill, our subgroup, where the median time was doubled.

Conclusion: It was found that MCI drills do impact patient care, specifically extended triage times. These findings are crucial and should be considered to ensure that real time patient care is not jeopardized.

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The Professional Roles and Core Competencies of Pharmacists in Disaster Management - A Qualitative Study

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Introduction: The role of pharmacists in disasters has been increasingly acknowledged, yet their responsibilities and core competencies for effective disaster management remain insufficiently defined, limiting their engagement. As pharmacists' roles in clinical care expand, their involvement in disaster situations has similarly evolved. However, conventional pharmacy education in Taiwan currently lacks comprehensive training in disaster management. This study aims to elucidate pharmacists' roles in disaster management and identify essential competencies, proposing a framework for advancing disaster-related education for pharmacists.
Methods: A qualitative study was conducted through semi-structured interviews from July 2024 to November 2024 with senior pharmacists from the Pharmaceutical Society of Taiwan, the Federation of Taiwan Pharmacists Association, and healthcare professionals from five disaster medical assistance teams. Participants were purposively selected, and the interviews explored pharmacists' roles and required competencies in disaster contexts. Data were transcribed and analyzed via thematic analysis, with a second researcher contributing to enhance reliability. Preliminary findings were reviewed by participants to ensure validity.
Results: Theoretical saturation was achieved after interviewing 15 participants. Nine categories of roles and their respective competencies were identified: understanding of disasters, self management, clinical pharmacy, pharmaceutical management, first-aid skills, psychological support, medical assistance, teamwork, and policy-making. These were consolidated into four key themes: basic disaster knowledge, pharmaceutical care in disasters, healthcare extension, and disaster management. These themes form a progressive structure for pharmacists' education in disaster management, grounded in their professional expertise. It begins with the application and enhancement of existing knowledge based on an understanding of disasters and extends to other healthcare related services, ultimately progressing to disaster management.
Conclusion: The study identified the professional roles of pharmacists in disaster management, encompassing nine core competencies. This framework provides a basis for defining training objectives and structuring disaster preparedness programs for pharmacists.

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Report from the Special Committee on Crush Syndrome of the Japan Association for Disaster Medicine (JADM): Strengthening Multidisciplinary Collaboration and Response Systems to Improve CS Survival

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Introduction: The occurrence of crush syndrome (CS) during large-scale disasters, such as the Hanshin-Awaji earthquake, has demonstrated the critical need for a well-structured response system to improve survival rates. CS often leads to severe complications like acute kidney injury, necessitating immediate and coordinated medical intervention. Proper rescue, rear-area transport, and multidisciplinary hospital treatment must be ensured from the onset of a disaster. Furthermore, a unified response across multiple agencies, including healthcare professionals, emergency services, and international support organizations, is vital to ensure the efficient management of CS cases.
Methods: Our Research Group, under the Ministry of Health, Labour, and Welfare, conducted a comprehensive analysis of CS occurrence in past disasters. This included evaluating on-site response protocols, standardizing treatment procedures (such as dialysis), and reviewing surgical interventions. The committee established within the academic society focused on accumulating case data, preserving historical knowledge, understanding international standards, and sharing new findings through educational activities. Research was also conducted on the effectiveness of various treatment modalities, such as early blood purification therapies.
Results: Several key issues were identified: the need for a consistent severity classification system for CS patients, the revision of long-distance transport protocols, and a reassessment of the Crush Injury Cocktail. Additionally, the utility of decompressive fasciotomy, amputation, and the timing of early blood purification therapies were evaluated. Based on research, updated guidelines for long-distance transport and comprehensive treatment, incorporating both intensive care and surgical intervention, were proposed. Knowledge sharing was expanded through international collaborations and participation in global working groups.
Conclusion: Future efforts will focus on strengthening inter-agency and international collaborations, along with proactive academic and public education initiatives. Comprehensive investigations of CS cases from recent disasters, such as the Noto and Kumamoto earthquakes, will be conducted to further enhance disaster preparedness and response strategies.

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Civil Preparedness in Asymmetric Conflicts: A Bystander Mass Casualty Training Concept by Israel's Emergency Medical Services

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Introduction: The October 7, 2023, terrorist attack in Israel and the 2022 Russian invasion of Ukraine have highlighted the need for lay bystanders to be able to assist victims during mass casualty incidents (MCIs) before the arrival of

Emergency Medical Services (EMS). The "First Seven Minutes" (F7M) training has been developed by Israel's EMS to train lay bystanders to respond medically in this context by teaching a seven-step approach to administering an MCI scene. A programmatic study was conducted to understand if F7M increased the self-assessed ability among participants to respond and whether this varied with the participants' level of personal resilience.

Methods: This was a survey-based before-after intervention study where all F7M participants from 2018-19 were invited to participate. A 5-point Likert scale questionnaire was administered before and after training to investigate self assessed ability to respond medically in conflict-related MCIs. Personal resilience was assessed using a modified Brief Resilience Scale. The Wilcoxon signed-rank test was used to test for significance between mean scores.

Results: The analysis included a total of 128 participants. Following training, self-assessed ability to respond increased significantly (Mean Difference 0.5, $p<0.05$). Low-resilience participants benefited more than participants with normal or high resilience (MD 1.14, $p<0.05$ vs MD -0.38, $p<0.05$, CI: 0.73 – 1.56 vs CI: -0.52 – -0.23).

Conclusion: In contemporary armed conflicts with escalating violence against civilians, F7M may be a useful tool for building capacity in bystanders to assist during MCIs. Further, it may be of benefit in wider preparedness efforts to mitigate civilian loss of life during armed conflicts. The relevance of F7M in this context will be more extensively discussed during an oral or poster presentation.

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Impact of Interactive Skills Sessions on Medical Students Learning AWLS

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Summary: To expand wilderness medicine education for medical students, the Advanced Wilderness Life Support elective course at Cooper Medical School of Rowan University was developed and piloted. The course is a one-week introduction to wilderness medicine approaches, treatments, and working with limited resources. This course consisted of a unique format of daily lectures followed by afternoon simulations, hands-on practice, and practical skills. Topics included performing primary and secondary surveys in the backcountry, basic preparedness, and various wilderness emergencies. Students participated in simulations incorporating these topics, culminating in a written exam and a practical skills exam. Passing both exams resulted in Advanced Wilderness Life Support certification.

Ten students participated in the course. Students received a survey pre- and post-course to assess their knowledge of the information taught. The results of the survey showed the median score improved from 65% pretest to 85% post-test. Results indicate an improvement in knowledge following the AWLS course. A second survey was given to gauge the impact of the hands-on sessions with four questions using a scale of 1 to 5 (1 being 'did not have an impact', 5 being 'crucial to learning'). Six students (86%) felt that hands-on skills were important to learning and retaining the content taught in this course (43% rated 4, 43% rated 5). Five students (71%) completely agreed (rated 5) that their confidence in recognizing and appropriately treating wilderness medicine emergencies benefited from the hands-on sessions compared to lectures only. Regarding retention, five students (71%) rated 4, one student rated 3, and one student rated 2 (1=do not feel confident in my skills; 5=feel confident in my skills). Overall, these results indicate that interactive, hands-on sessions enhance the learning experience for students, potentially improve retention, and should be considered integral components of wilderness medicine elective courses.

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Factors Influencing Hospital Staff's Willingness to Participate in Disaster Response

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Introduction: In the past 12 years, 7,348 disasters have occurred globally, causing numerous casualties. Ensuring hospital staff availability during disasters is essential for maintaining functions and providing care to affected individuals. This study aims to identify factors associated with the willingness of hospital staff to report for duty during disasters.

Methods: A cross-sectional survey was conducted by the Department of Disaster Medicine at a 600-bed public hospital in Japan (Hospital A) from November to December 2023. Of 1,549 staff, data from 590 respondents were analyzed. The survey collected information on personal characteristics (e.g., job category, age) and assessed willingness to report during a disaster on a 7-point scale. Participants were classified into high and low willingness groups. The disaster awareness scale was also used to assess participants' awareness. This scale measures preparedness knowledge, response confidence, and risk perception, with higher scores indicating greater awareness.

Results: The high willingness group (n = 225) had more staff with over 20 years of experience (44.0%, n = 99) compared to the low group (32.3%, n = 118, p = 0.017). Full-time employment was more common in the high group (74.7%, n = 168) than in the low group (66.6%, n = 243, p = 0.045). Additionally, staff with a commute time under 30 minutes were significantly more prevalent in the high group (70.2%, n = 158) than in the low group (53.7%, n = 196, $p < 0.001$). The high group also had a higher disaster awareness score (77.6) compared to the low group (76.1, p = 0.028).

Conclusion: Reducing commute times and enhancing disaster awareness could improve staff participation during emergencies, which is essential for maintaining hospital operations.

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Survey on Awareness of BCP (Business Continuity Planning) through Training for Dealing with Power Outages Using VR (Virtual Reality)

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Introduction: Power outages can be caused by natural disasters, accidents in the surrounding area, or damage from wild animals, but it is difficult to recreate and train for these situations in medical institutions. VR technology is suitable for training because it can reproduce situations that are difficult to experience in real life, such as power outages. In addition, BCPs are important in crises such as power outages, but their recognition is unknown. This study aimed to develop teaching materials that reproduce power outages and stoppages in elevators using VR and to investigate the recognition of BCP.
Methods: In the VR training material, the trainees are transporting a patient when the elevator stops suddenly due to a power outage, and they are trapped in the dark for several minutes. The trainees are all staff members from the hospital, including students, and the scene unfolds as the trainees consider the patient's anxiety, the alarm sound of the infusion pump, how to respond to the emergency button, and how to use the emergency power supply. After the power outage training, a survey was conducted to assess the effectiveness of the training and the level of awareness of the BCP.
Results: From the results of the questionnaire, it can be said that the training was effective, as the trainees felt anxious and scared, and found it difficult to remain calm. The results showed that many of the trainees were unaware of BCP, and through this training, they learned about the importance of BCP.
Conclusion: BCPs are important as a measure to take in the event of an emergency, but their recognition was low. This teaching material is useful as a safety education tool to raise awareness of BCP through power outage training.

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Incorporating Simulation Exercises Using Collaborative Tools into Disaster and Emergency Medicine curriculum—A Pilot Survey Among Saudi Arabian Professionals

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Introduction: Disasters are sudden and unpredictable natural or human-generated events that can cause short- and long-term humanitarian and property losses, and environmental damage. The Sendai Framework for Disaster Risk Reduction 2015–2030 notes that boosting education and training efforts in the field of disaster medicine is a crucial part of disaster risk reduction. Disaster training has become the core of disaster education since it raises awareness regarding the randomness of natural disasters and the nature and dynamics of the required medical management. This study evaluates the need for changes in Saudi Arabia's current disaster and emergency management curriculum, incorporating disaster exercises and using the collaborative tool of CSCATTT (Command and Control, Safety, Communication, Assessment, Triage, Treatment, Transport).
Methods: Several statements were presented among five experts in three rounds of the Delphi technique; thereafter, the statement was presented as a questionnaire among 128 professionals and practitioners in disaster medicine through a quantitative survey.
Results: The results revealed that a high percentage of participants urged the necessity for several changes in the current Saudi curriculum of disaster and emergency medicine. According to the participants that the current curriculum does not cover essential knowledge in Command and Control, Safety, Communication, Assessment, and the roles of each individual and agency, needs to be enhanced by including several other aspects of disaster and emergency management, such as all risk management, internal and external communication, coordination, cooperation and collaboration in transport issues, teaching and training, and promoting multiagency collaboration and enable extracurricular activities.
Conclusion: This study recommends continuous revision, development of the current curriculum in Saudi Arabia, and integration of collaborative tools, as well as the inclusion of

disaster simulation using the same collaborative strategy. This study may be transferable to other developing countries.

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How Prepared Are European Emergency Physicians for the Occurrence of Disaster? A Knowledge-Attitude-Readiness-to-Practice Observational, International Survey-Based Study of Disaster Preparedness Among European Emergency Physicians

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Introduction: Recent years have seen an increase in disaster situations worldwide. Emergency physicians (EPs) have a key role in all phases of disaster management. There is no current international description of Disaster Preparedness (DP) among European EPs.

Methods: An international survey-based study of DP levels, using a modified KArP model, was conducted between April and June 2024 among post-residency EPs in 9 European countries. Their levels of education, training, and experience in Disaster Medicine were described. Correlations were sought between the participants' general characteristics and DP-scores.

Results: Results from 813 participants were collected. Mean rP-score was 66,54% (SD 14,99) and mean KArP-score was 71,83% (SD 12,45). Only half of the participants reported a dedicated practical training in Disaster Medicine during specialty training, whereas almost 25% of all participants reported no Disaster Medicine training. Only 57% reported full-scale disaster exercises in the previous 12 months. Significant differences were found from one country to another in levels of education and training in Disaster Medicine, as well as in DP-scores. Several factors were identified that were significantly associated with DP-scores. DP-scores were significantly lower among pediatric EPs.

Conclusion: It is crucial to improve and harmonize individual and collective DP in European EPs. It is particularly critical to improve DP levels in pediatric EPs. Based on the results, simple checklists aimed at optimizing individual and collective DP levels were proposed. This is the first international description of DP among European EPs. Further studies are needed to validate this EP-specific KArP-tool, to continue identifying factors associated with improved DP-scores in EPs, and to study the impact of interventions aimed at optimizing DP, both individually and at department-level.

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Pilot Implementation of a Culturally Adapted Prehospital Trauma Program for Community Health Responders in Rural Nepal

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Introduction: Trauma-related deaths are rising in low- and middle-income countries (LMICs) like Nepal, where pre-hospital care systems are limited. Community health responders (CHRs) could reduce the time to post-injury care in rural settings. This pilot study evaluates the feasibility and impact of a CHR-based trauma program in rural Nepal.

Methods: A quasi-experimental study first adapted a trauma curriculum for CHRs in Achham, Nepal, using global guidelines from the World Health Organization and the American College of Surgeons, using a modified Delphi process. The final program included three components: a two-day skills training, a pictorial guidebook for reference, and a one day refresher after three months. Two municipalities in Achham were assigned to intervention or control, with only the intervention group' CHRs receiving the training. Outcomes measured included CHRs' knowledge and confidence assessed over six months, and patient-based pre-hospital care process indicators. Care process indicators were assessed at the hospital emergency department. Changes in knowledge over time were analyzed using repeated measures ANOVA. Bivariate analysis was performed to assess differences in pre-hospital trauma care indicators by study group.

Results: The intervention group showed a significant increase in knowledge and confidence immediately post-course and sustained over six months. There was no significant difference in mean patient age (26.5 years versus 22.1) and trauma mechanism ($p = 0.14$) across the two groups. The most common mechanism was falls (n=165, 77.5%). Intervention municipalities had higher rates of pre-hospital care provision, including fracture immobilization (51.4% versus 17.1%, $p < .001$) and cervical collar use, compared to controls.

Conclusion: This study adapted and implemented a contextual trauma training program for CHRs in rural Nepal. Results show early feasibility and appropriateness in this context. The program leverages existing community networks and offers a potential approach in LMICs to bridge the existing critical gaps in rural pre-hospital trauma care that require further investigation.

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Teamwork Processes in Immediate Responder Groups With or Without Emergency Response Expertise: Controlled Experimental Simulation Study

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Introduction: Immediate responder groups in disaster response need to self-organize to provide aid before the arrival of the professional response. These groups consist of individuals in proximity to the event and may vary in emergency response expertise from emergency response professionals (ERP) to medical laypeople. While ERP training typically includes some teamwork education, research on ERP expertise on teamwork in immediate responder groups is limited. This study investigates how teamwork processes differ between groups with or without an ERP in a controlled simulated scenario.
Methods: Twenty-eight groups (76 participants) participated in a traffic accident scenario. Participants completed the Team Process Survey afterwards, measuring transitional, action, and intrapersonal processes. Transitional processes include goal setting and planning, action processes involve monitoring goal progress, and intrapersonal processes concern maintaining motivation and handling conflicts. The scenario involved two critically injured people and limited resources. An ERP was present in eight groups. The controlled simulation allowed for the standardization of situational and environmental factors.
Results: A significant difference in transitional processes was found between groups with (M=3.2, SD=0.9) and without ERP (M=2.78, SD=0.6), Welch's $t(31.3) = -2.05$, $p = .05$, with a medium effect size, Cohen's $d = -0.55$. However, no difference was found in the action, Welch's $t(31.8) = -0.51$, $p = .61$, or intrapersonal, Welch's $t(44.9) = 0.45$, $p = .65$, process dimensions.
Conclusion: The presence of emergency response expertise in immediate responder groups can be expected to support transitional team processes by facilitating shared reflection on the groups' goals, strategies, and plans in between periods of individuals' taskwork efforts. However, further training in leadership in line with current best practices in intra-professional teamwork for both ERP and in first aid education for medical laypeople could potentially improve action and intrapersonal team processes in the immediate responder phase of disaster response.

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MassCas Tabletop Game for Primary Health Care Teams as a Successful Training Tool

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Introduction: Mass Casualty Incidents (MCI) require complex training and response, and local response in the first hours is essential. In many places worldwide, this initial local response is provided by the primary health care (PHC) network. The training method for MCI is complex and costly, and may not be integrated into the PHC network. Our objective is to measure self-perception and the impact of a brief training action through an MCI tabletop exercise carried out with primary care doctors and nurses using the "MassCas" tabletop game, specifically designed for this project.
Methods: Descriptive intervention study of the impact of a two-hour training intervention in the Health Research Institute of the Principality of Asturias with primary care doctors and nurses from the Principality of Asturias. Self-perception using a Likert scale on methodology, knowledge, and skills was analyzed. We also tested knowledge retention with a multiple-choice knowledge test after two months. Strengths and weaknesses of the methodology, as well as attitudes toward mass casualty incidents, were also identified through open questions.
Results: Twenty-seven doctors and nurses participated in the training program. 85% of participants improved their level of knowledge after two months without studying material. Self-perception measured 27 items in 3 dimensions: methodology (Median=9; IQR=2), knowledge (Median=10; IQR=1), and skills (Median=9; IQR=1). All items except one had a median greater than or equal to 9. All items ranked a median 8-10.
Conclusion: Primary care health professionals perceive gamification using the "MassCas" tabletop game for mass casualty incidents as a useful tool in their training in mass casualty incidents and in acquiring specific knowledge and skills in this area.

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Hospital Triage Tools Used During Disaster Events in Canada Over the Last 40 Years: A Scoping Review

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Introduction: A mass casualty incident (MCI) is a sudden onset event that can generate many patients with the potential to overwhelm healthcare resources. Many Canadian hospitals plan to use disaster-specific triage tools during an MCI, rather than routine procedures, despite a lack of studies. It is not known whether these alternate triage tools have ever been utilized in actual Canadian MCIs. This study sought to discover what triage strategies have been recorded and their frequency of use.
Methods: A scoping review of scientific databases and the grey literature was conducted to find published material regarding the triage strategy employed by the responding hospital(s)

during real MCI events in Canada over the last 40 years (i.e., January 1, 1983, to December 31, 2022). A survey of healthcare providers was also administered to elicit further information regarding triage practices.

Results: The database searches identified 279 reports; 32 underwent full manuscript review, and 2 were included in the study. The grey literature search yielded 28 reports; 23 were fully reviewed, and 1 was included. The grey literature search also identified 22 events that triggered MCI alerts at Canadian hospitals, and contacts for 15 of these events were invited to participate in the survey. Survey data were retrieved from 6 events (40% response rate). Nine separate disaster events were reported on in total. Six of these events reported a pre-existing hospital MCI triage plan, with 5 (83%) citing intent to use an alternate triage system. During the actual event, only 1 (12.5%) reported using an alternate triage strategy.

Conclusion: It may be appropriate to disregard alternate disaster triage tools for hospital triage and use routine procedures, saving valuable time and financial resources. The creation of a national repository of disaster responses impacting healthcare delivery in Canada should be strongly considered.

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Updating Processes in Wartime Training: Field-Based Learning, Validation and Implementation of Training and Certification Programs for the IDF Medical Personnel

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Introduction: Thousands of individuals sustained injuries or lost their lives in the recent war in Israel. The Israeli Army Military Medical Academy is tasked with providing training for both active-duty and reserve soldiers while concurrently updating guidelines as part of ongoing field education. This study aims to elucidate the process that facilitated the training of thousands of soldiers while concurrently updating and enhancing their knowledge as part of an investigation into actual battlefield events.

Methods: A mixed-methods approach was employed. Quantitative content analysis was performed on training materials updated during the conflict to identify modifications in training emphasis and examine real-time content updates. Qualitatively, semi-structured interviews were conducted with 15 paramedics and physicians; 7 were in the reserves, and 8 were in mandatory service. The inclusion criteria were participation in the Gaza conflict directly. The goal was to assess their satisfaction with the relevance of pre-deployment training. Interview data were analyzed using thematic analysis.

Results: Quantitative analysis revealed significant shifts in training focus, with increased emphasis on:

1. Hemorrhage control.
2. Volume restoration for patients in deep shock.
3. Avoiding unnecessary procedures.
4. Proper medical reporting and documentation

The qualitative analysis yielded five key themes:

1. Enhanced self-esteem among trained personnel.
2. Importance of incorporating battlefield examples in training.
3. Trainers' adaptability to modify programs upon request.
4. Significance of stripping and covering injured to preserve body heat during drills.
5. Necessity of including pain management in practical training.

Conclusion: This study underscores the critical need for real-time modifications in military medical training during active combat to optimize training quality. The operational methods employed within the Israeli army serve as a potential model for implementation in military training units globally. Future research should focus on the long-term outcomes of adaptive training methods and their applicability to other military and civilian emergency response contexts.

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Enhancing Cross-Cultural Competence and Adaptability in Emergency Medical Team Junior Members Training through the Implementation of a Serious Game

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Introduction: China is a country where diverse ethnic groups coexist, each with its own unique culture. Therefore, national emergency medical teams(nEMTs) need to have a high level of cultural sensitivity and adaptability when carrying out rescue operations. Despite the proven effectiveness of serious games in enhancing general training outcomes, specialized tools targeting cross-cultural skills remained scarce. Therefore, this study introduced an innovative serious game, EMT-CrossCulture Game(ECCG), designed to augment traditional training methods through immersive cultural simulation.

Methods: ECCG created immersive scenarios that simulated various cultural and medical emergencies. A retrospective comparative analysis was conducted between 2023 and 2024 with 56 nEMT junior members. Participants were assigned to an experimental group(using ECCG in addition to standard training) and a control group(receiving standard training without the cross-cultural component). Data collection included pre- and post-training assessments, a comprehensive final test, a survey on cross-cultural adaptability, game usage data, and qualitative feedback through semi-structured interviews. The repeated-measures analysis of variance(ANOVA) was used to compare the scores.

Results: Significant improvements in cross-cultural competence and adaptability were observed in the experimental group compared to the control group($p<0.05$). Additionally, participants in the experimental group reported higher levels of engagement, motivation, and satisfaction with the training. Qualitative feedback provided insights into the strengths and areas for improvement of the game.
Conclusion: ECCG training is a potentially effective method for improving the cross-cultural competence and adaptability of NEMT junior members. These findings can provide information for future training programs, and the team is dedicated to developing AR and VR versions to enhance the learning experience and emergency response capabilities.

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Gamifying Virtual Patients to Support Military Trauma Training

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Introduction: Virtual patients (VPs) have the potential to support military medicine training. Gamification is at least as effective as traditional educational methods and is often more effective for improving knowledge, skills, and satisfaction in health professions education. In military trauma care, where medics must make both medical and tactical decisions, gamified VPs can offer active learning opportunities to better prepare them for providing medical care in austere environments. Despite the potential of VPs to improve military medical training, studies exploring the integration of gamification into VP design are limited.

This study aimed to understand the reasoning and perceptions of Swedish military medics when interacting with VPs, offering insights and recommendations for designing VPs with game elements to support decision-making.
Methods: Fourteen military medics from the Swedish Home Guard-National Security Forces participated in a tactical combat care course, engaging with three VP cases simulating military trauma scenarios. Data were collected through think-aloud sessions and semi-structured interviews. The participants' reasoning processes and perceptions were analyzed using interaction analysis, along with reflexive thematic analysis. A second round of coding identified game elements that could enhance the VP design.
Results: Our analysis indicated that mistakes in VP decisions, followed by feedback, facilitated the military medics' reflection. The thematic analysis revealed six themes: motivation ("keep on trying"); agency in interaction with VPs; realistic tactical experience; confidence ("I know that the knowledge I have works"); social influence on motivation; and personalized learning. Game elements such as scoring, badges, progress bars, challenges, avatars, and leaderboards were suggested to make the learning experience more enjoyable and increase medics' confidence.
Conclusion: Overall, the VPs were positively received. Gamification in VP design appears to be a promising approach for military trauma training, encouraging the inclusion of game elements as well as consequences for wrong decisions to support military medics' training.

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Game Elements in Military Trauma Simulations: Results from a Systematic Review

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Introduction: Gamification, the use of game elements in non-game contexts, has shown promise in enhancing engagement and motivation in educational settings. In military trauma training, simulations incorporating game elements can replicate austere conditions, providing a safe environment for medics to practise essential skills. Despite this potential, the literature remains inconsistent, with controversies likely arising from a lack of understanding of how game elements and their combinations work. This systematic review aims to examine the use of game elements in the design of military trauma simulations and to evaluate the outcomes reported.
Methods: We systematically searched multiple databases, screening 1,168 abstracts and narrowing them down to 630 after removing duplicates. A total of 34 studies met our inclusion criteria. Two reviewers independently extracted data using a structured form. We coded game elements based on established gamification frameworks and assessed study quality using MERSQI and Côté and Turgeon's tool. A reflexive thematic analysis was conducted to understand the motivations—both deliberate and unintentional—behind the use of these game elements in the included studies.
Results: The reflexive thematic analysis identified five themes: Recognizing the World; Believing and Feeling; Play by Choice; Varying Challenges; and Keep on Playing. The game elements most frequently used were plot, scoring, time pressure, avatars, and imposed choice. Multimedia was commonly used to enhance immersion.
Conclusion: The reflexive thematic analysis revealed that game elements in military trauma simulations are often motivated by the need to create realism, facilitate immersion, empower learner agency, promote variation, and sustain motivation. While some elements were included intentionally, many were integrated without a deliberate gamification strategy. Our results suggest that simulations could benefit from a more intentional approach to gamification, making them more flexible and engaging in supporting military trauma training.

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A Description of a Virtual Global Disaster Medicine Fellowship Training Program

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Summary: The development of standardized disaster medicine curricula for frontline providers is lacking in the international platform. This report describes the approach utilized by the State University of New York (SUNY) Downstate, an Academic Medical Center in New York. SUNY offers one of the few disaster medicine fellowships in the United States, which also accepts international applicants and non-emergency Medicine (EM) physicians. Previous examples of non-traditional graduates from the program include the Director of the SUNY Pediatric Intensive Care Unit, a Critical Care specialist in India, and an EM physician in Ghana.

Each of the non-traditional graduates completes a "virtual" version of the traditional Disaster Medicine Fellowship. The curriculum includes topic-based modules during which the fellows attend online courses, create and/or update their home institutions' disaster protocols, create and deliver training to their institution's staff, conduct disaster drills for their community, produce original research, and participate with local disaster response partners. With each topic-based module, the program's benefits extend beyond the fellow gaining pertinent knowledge. Intentionally, the curriculum design enables the institution and community where the fellow works to gain staff training, updated disaster protocols, and increased coordination among local response agencies.

The two main goals of the SUNY Global Disaster Medicine fellowship are to increase access to a global disaster medical curriculum and to strengthen the emergency preparedness for communities that have fellows in the program. The next steps for this program are creating a formal annual virtual class of ten participants from an academic medical center in Kuala Lumpur, Malaysia. The proposal has been signed by leaders from both centers and is scheduled to begin in July 2025. Beyond that, future goals are to expand this program to multiple academic centers globally that do not currently have access to a disaster medical fellowship program.

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Language Barrier and Its Implications for Delivering Emergency Medical Services in Saudi Prehospital Settings.

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Introduction: In the prehospital environment, language barriers can significantly impede communication between Emergency Medical Services (EMS) personnel and patients, which in turn affects the delivery and quality of emergency care. While this issue is widely acknowledged as a critical concern on a global scale, there remains a notable gap in research specifically addressing its implications within Saudi Arabia.
Methods: A quantitative cross-sectional study was conducted in Jeddah, Saudi Arabia, involving a sample of 278 EMS personnel from three key institutions: the Saudi Red Crescent Authority (SRCA), the Ministry of Health Hospitals (MOH), and the National Guard Hospital (NGHA). Participants were selected through convenience sampling. Data were gathered via a questionnaire that assessed demographic information, language proficiency, and perceived language barriers using a Six-Point Likert scale. Statistical analyses included means and standard deviations for quantitative variables and frequencies for categorical data.
Results: The study identified several factors contributing to language barriers in paramedic-patient interactions, including family member interference (32.37%), patient stress and distress (30.22%), and language disparities between paramedics and patients (28.06%). Participants reported significant communication challenges, such as potential loss of critical information (mean=4.49) and difficulties in engaging with foreign-speaking families (mean=3.73). Notably, paramedics trained in English and working in Arabic-speaking environments faced heightened language barriers, particularly regarding patients' comprehension of diagnoses and interventions (p-value=0.04). EMS personnel expressed concerns about patient resistance stemming from language barriers, which could adversely affect patient care outcomes.
Conclusion: These findings underscore the urgent need for targeted interventions to mitigate language barriers in prehospital emergency care, ensuring equitable and high-quality services for all patients.

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Empowering Future Healthcare Professionals: Training Disaster Medicine Trainers (TdmT) Program

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Introduction: In a world increasingly challenged by disasters and emergencies, practical disaster medicine training is crucial for saving lives and improving response efforts. The Training Disaster Medicine Trainers (TdmT) educational program, launched in 2015 through a partnership between the International Federation of Medical Students' Associations (IFMSA) and the Center for Research and Training in Disaster Medicine, Humanitarian Aid, and Global Health

(CRIMEDIM), aims to enhance the capacity of medical students worldwide. The program provides theoretical knowledge and practical skills in disaster medicine, addressing the growing need for competent leaders in disaster and emergency management, aligning with the Sendai Framework's goals for disaster risk reduction. TdmT seeks to train a new generation of medical professionals who can effectively contribute to disaster risk management, becoming peer educators in their universities and beyond. The program empowers graduates to serve as trainers and advocates for disaster medicine practices by focusing on knowledge dissemination.

Methods: The program is delivered annually, and includes online and residential phases with theoretical lessons and simulations (table-top, computer-based, and full-scale). Covering topics such as triage during mass casualty incidents, pre-hospital and hospital responses, and Chemical, Biological, Radiological, and Nuclear (CBRN) incidents. To date, TdmT has trained 140 graduates worldwide who have implemented disaster medicine training at local, national, and international levels.

Results: Graduates of the TdmT program have successfully established training sessions, workshops, and simulations, enhancing capacity building in disaster medicine and disaster management within their communities. Feedback indicates improved knowledge and confidence among participants, contributing to more effective emergency management practices.

Conclusion: The TdmT program fosters a culture of preparedness and resilience in health systems worldwide. By equipping future leaders and professionals with essential tools and knowledge, TdmT strengthens individual capabilities and enhances disaster response.

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Establishing Priorities in Pediatric Disaster Medicine: A Consensus Based Research Agenda in the United States

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Introduction: Children in the United States are disproportionately impacted by disasters. Fourteen million children live in high risk areas for natural disasters, and over 4,300 were affected by gun violence in 2022 alone. Children have unique vulnerabilities, leading to higher morbidity and mortality compared to adults. Despite these distinctive traits, research addressing pediatric-specific needs in disaster medicine remains limited, underscoring an urgent need for a focused pediatric disaster medicine research agenda for the United States to improve outcomes and preparedness for future events.

Methods: A consensus-driven pediatric disaster medicine research agenda was developed using a scoping review followed by a modified Delphi process to identify research questions. The Delphi process leverages expert input, enabling participants to refine their responses based on expert feedback until consensus is achieved. Forty-eight pediatric healthcare and disaster medicine subject matter experts participated in three rounds of surveys, discussions, and voting. The process aimed to identify key research areas and determine a prioritized consensus research agenda for pediatric disaster medicine.

Results: One hundred six research questions were generated from the gaps in the literature, and an additional 155 research questions were generated by the Delphi panelists, for a total of 261 research questions generated and categorized into 20 subtopics across five main topics: Response, Recovery, Mitigation/Prevention, Preparedness, and Education. Of these, 10 subtopics were prioritized as consensus for high priority, including capacity and capability, community involvement, and health equity considerations. Critical research areas were highlighted as mental health needs, technology, and disaster-specific metrics.

Conclusion: This consensus-driven research agenda is the first of its kind for pediatric disaster medicine, offering a roadmap for future research initiatives. By addressing identified gaps in disaster preparedness and response for children, this US-based agenda aims to enhance evidence-based practices, guide future research, and improve the health and safety of pediatric populations during disasters.

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Identifying the Challenges of ASEAN Joint Research on Hospital Safety Index

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Introduction: The ASEAN Joint Research on Hospital Safety Index (HSI) is one of the implementations of the start-up program under the ASEAN Academic Network on Disaster Health Management (AANDHM). The objective of this joint research is to analyze the implementation of the self-assessment Hospital Safety Index (HSI) for safe hospital evaluation in ASEAN countries. However, conducting multinational research presents unique challenges.

Methods: This study employs a narrative approach to analyze the challenge of ASEAN joint research implementation.
Results: The findings indicate three key challenges. First is the challenge of choosing a methodology that is both rigorous and universally applicable in diverse multinational settings. This diversity necessitated several changes and modifications of the research methodology in the proposals, adding substantial delays to project timelines. Secondly, email communication for participant recruitment presents challenges, whereas direct meetings and facilitation by the ARCH Project have proven valuable for initiating further engagement. A third challenge concerns the ethical clearance (EC) process. Understanding and adhering to the various Institutional Review Board (IRB) protocols of each participating country was time-consuming and complex. The Fifth Meeting of the Steering Committee for AANDHM recommended that the research team follow EC and IRB procedures according to their country's regulations, while participants are only required to undergo EC review if mandated by their country. This guidance helps resolve the EC confusion that stalled the joint research process.
Conclusion: This study reveals that selecting methodologies applied in different contexts of disaster health management and diverse IRB protocols poses significant challenges to the ASEAN Joint Research on Hospital Safety Index. Addressing these issues is essential for developing regional mechanisms for the promotion of joint research activities. Future recommendations include training on developing research methodology, developing efficient communication platforms, and conducting surveys on EC guidelines across ASEAN to enhance research collaboration.

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The Development of a Citizen Disaster Preparedness Training Program

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Summary: Mass casualty incidents (MCI) stress systems. Research shows the critical role laypersons play in saving lives and reducing morbidity by providing time-sensitive interventions at a disaster scene. While many first-aid and basic life support courses exist, training for laypersons to respond to disasters is few. A course, "Ground Zero," was developed by Disaster Volunteer Corps, Singapore General Hospital, for laypersons focusing on basic disaster management and simple lifesaving interventions. This review aims to detail the methods of course development and challenges faced in this pilot program. Kern's 6-step approach was undertaken for curriculum development. Core content for Ground Zero included scene safety, triage, emergency communications, and principles for basic lifesaving procedures. Emergency physicians supervised Emergency Medicine residents and trained students who conducted the sessions. Course feedback was sought through online forms. Pre- and post-session quizzes were undertaken to assess the learning and confidence of the participants.
(Key challenges faced)
• Implementation: Phase 1 was delivered online with breakout sessions, due to COVID-19 pandemic restrictions. Phase 2 was delivered in person, with sessions centering around hands-on practice, and culminating with a simulated MCI, with scene safety, assessment and intervention, and evacuation of casualties undertaken by participants.
• Understanding: the course needed to address disaster response from the layperson's perspective. MCI principles needed to be simplified, and the limitations of life-saving measures in MCIs had to be addressed sensitively. Citizens have differing levels of baseline medical understanding and willingness to intervene. Focus stayed on empowering and not endangering them in their efforts. The importance of alignment with emergency systems was also taught.

Previous studies demonstrate the willingness of laypersons to respond to disaster scenarios. However, there is a lack of training in this area. Education remains a cornerstone in disaster readiness. Further training and research need to be conducted.

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Teaching Comprehensive Emergency Management and Hazard Vulnerability Analysis: A Comparison of Serious Game and Lecture Based Methods

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Introduction: Comprehensive Emergency Management (CEM) and Hazard Vulnerability Analysis (HVA) are vital topics in disaster management, particularly for hospital emergency preparedness training. Traditionally, these topics are taught through lectures, which rely heavily on the instructor's ability, potentially limiting effectiveness. This study introduces a serious game approach as an alternative method and compares its effectiveness with lectures in fostering engagement and knowledge gain.
Methods: Participants, all hospital staff, were divided into two groups. The Lecture (L) group received a traditional lecture from an expert in hospital emergency management, while the Game (G) group engaged in a board game, "Hospital Hazard," designed by the researchers to teach CEM and HVA concepts. Participants completed surveys before and after the sessions. The pre-survey assessed interest in learning CEM and HVA and willingness to engage in hospital CEM/HVA activities, using a 5-point Likert scale (1=very low, 5=very high). The post-survey reassessed these metrics and evaluated session enjoyment, willingness to recommend, perceived educational effectiveness, and knowledge gain, also on a 5-point scale (1=very poor, 5=very good).
Results: The L group included 60 participants, and the G group had 109. Both groups showed significant improvement

in interest and willingness after the sessions (Interest: L 3.65 → 4.08, G 3.76 → 4.30; $p<0.05$; Willingness: L 3.67 → 4.07, G 3.83 → 4.30; $p<0.05$). The G group rated the game significantly higher in terms of enjoyment, willingness to recommend, and effectiveness as a learning tool (G:L = 4.73:4.33, 4.67:4.33, 4.68:4.47, respectively; all $p<0.05$), with no significant difference in knowledge gain between groups (G:L = 4.46:4.40; $p=0.53$).

Conclusion: The serious game approach matched expert lectures in boosting interest, willingness, and knowledge gain among hospital staff. It outperformed lectures in enjoyment, recommendation willingness, and perceived effectiveness as a learning tool. Thoughtfully designed serious games are promising tools for teaching CEM and HVA in hospital settings.

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Health Considerations and Medical Implications for Female Combat Soldiers

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Introduction: In the Israeli Defense Forces (IDF), women are increasingly taking on combat roles that previously were reserved only for males. During the "Iron-Swords" war in Israel, female fighters of the IDF took part and fought alongside male soldiers in the Gaza Strip. It was the first time that female combat soldiers of the IDF officially joined the corps across the Israeli borders. This novelty raised a lot of questions about the medical aspects consumption of medical care and medication in this special group.

Methods: A 17-question questionnaire was distributed to the female soldiers of the Search and Rescue (S&R) brigade of the Home Front Command in the IDF. The survey contained both multiple-choice and open-ended questions. Questions focused on service characteristics, symptoms during the combat period, and medical care they received.

Results:

- 135 female soldiers serving as active duty or reserve soldiers answered the questionnaire. 98.5% (133) of soldiers were in combat positions, 71.9% (97) took part in fighting across Israeli borders.
- Gastrointestinal complaints, headaches, menstrual pain, and low back pain were the most common symptoms (46.7%, 40.7%, 37%, 30.4%, respectively).
- Additional complaints unique to female population were dysuria, vaginal symptoms such as pruritus and inconvenience (17%, 14.8% respectively).
- Half of the soldiers reached for medical care. 39.2% felt that the medical crew across borders did not have enough supplies and medications to treat them properly.
- Dysuria, vaginal symptoms and menstrual pain led to seek medical treatment in more than 60% of symptomatic soldiers (83%, 67%, 64% respectively).
- 39.3% of soldiers use chronic medications of any kind. 25.9% take oral contraceptives and 14.1% use nutritional supplements.

Conclusion: The concept of female medicine is different from our former understanding of frontline medical support. Standard medical cross-border kits do not include solutions to gender-oriented complaints. Personalized medical education and the provision of suitable medications are essential components of cross-border healthcare initiatives.

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Compression of the Pressure Created by SAM Pelvic Splint and a Novel AP MAX Pelvic Bandage by New Users on a Dummy Model

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Introduction: Injuries involving the pelvic area are common, and pelvic injuries occur in 25% of multiple trauma patients. Stop-the-bleeding, bandage, and temporary fixation over the pelvis are critical for trauma care in the pre-hospital setting. A novel pelvic binder (AP MAX Bandage) was designed and manufactured for this purpose. We conducted a study to compare the pressure created by the SAM pelvic splint, the most popularly applied in Taiwan, and our novel MAX pelvic Bandage by a group of new users on a dummy model.

Methods: A group of 30 volunteers was recruited to apply these two pelvic binders, a SAM pelvic splint, and a MAX bandage to a dummy. A design using the IV set, which was used to detect the intra-peritoneal pressure, was reset in the dummy to detect the pressure between the binder and the dummy. Those volunteers had practiced the SAM splint, but all were new to the MAX bandage. All the data about the pressure levels created by two pelvic binders were recorded one by one.

Results: On average, the SAM splint and the MAX bandage created similar pressure on the dummy by different users, and the volunteers applied the MAX bandage faster.

Conclusion: Compared with the SAM pelvic splint, the AP MAX bandage seems to be as good as the SAM pelvic splint and is easier for volunteers as newcomers. AP MAX bandage is 10 centimeters broader than SAM splint and provides more consistent pressure, regardless of whether it is on the middle of

the pelvic bandage or the edges. It is also applicable for hip fracture that is contraindication for the SAM pelvic splint. It is important for pre hospital trauma care because, for most of the cases, it is difficult to differentiate the hip fracture from pelvic fracture before arrival a the ER.

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Comparison of the Three-Level Collaboration and Hybrid Simulation Training Comprising the Three-Level Collaboration and Tabletop Exercise: A Retrospective Cross-Sectional Study.

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Introduction: In recent decades, disasters have increasingly impacted populations and public health systems, partly due to climate change, population growth, and infrastructure vulnerabilities. Effective emergency response requires robust preparedness through planning, training, and readiness assessments. The Three-Level Collaboration (3LC) exercise, focusing on local, regional, and national coordination, is a recognized approach to disaster preparedness. However, further empirical evidence is needed to assess the effectiveness of these training methods in strengthening disaster management capabilities. This study aims to evaluate their impact on enhancing these capabilities.

Methods: This mixed-method retrospective study analyzed data collected from the training sessions through observation and self-assessment questionnaires. The effectiveness of the Three-Level Collaboration (3LC) and Hybrid Simulation Training was evaluated based on criteria such as coordination among different levels, response time, and overall performance in simulated disaster scenarios.

Results: Participants included 120 medical personnel and staff from disaster response and disaster management organizations, including firefighters, NGOs, municipalities, and communities, participating in training programs (60 participants for the conventional method and 60 for the hybrid one). Participants' median age was 38 (32,44), 68 of them were women (55.7%), and 79 of them were healthcare professionals (64.8%). Participants in the conventional training group demonstrated improvement in the CSCATTT approach (collaborative measures for disaster management) by 48.5% compared to participants in the hybrid exercise, which showed 75% improvement.

Conclusion: The hybrid training method combining the Three-Level Collaboration and tabletop exercises proved more effective than the conventional method in enhancing participants' collaborative disaster management skills, as evidenced by the higher improvement rate in the CSCATTT approach. This suggests that hybrid training could be a valuable strategy for strengthening disaster management capabilities.

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How Thoroughly Are We Evaluating Disaster Management Trainings? A Scoping Review

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Introduction: Given the rare occurrence of disasters and the complexities of managing them, it is crucial to ensure that responders receive comprehensive training. Maintaining high standards in disaster management (DM) training is essential for effective DM. However, there is a lack of literature on the monitoring and evaluation (M&E) of DM training programs. This review aimed to document the current M&E strategies used in DM training.

Methods: On June 28, 2023, a systematic literature search was performed across the PubMed, Scopus, Embase, and Cochrane databases to identify studies that outlined the learning objectives and M&E strategies for DM training. The learning objectives were classified according to the revised Bloom's Taxonomy, and the evaluation methodologies were aligned with the New World Kirkpatrick model.

Results: 57 articles meet the inclusion and exclusion criteria, monitoring being reported by 5 studies, while all reported evaluation methods. The evaluations were centred around the second level of the New World Kirkpatrick model(N=57), with only 7 articles investigating the third level. 16 authors used existing M&E frameworks. When correlating the learning objectives with the evaluation methodology, a mismatch emerged, skills like the ability to "Apply" and "Create" being evaluated using

the second level of the New World Kirkpatrick model, instead of the third one.

Conclusion: The lack of monitoring and the low usage of existing M&E frameworks highlight a lack of awareness and standardization in the field. The mismatch between the learning objectives and the evaluation process may result in graduates being deemed ready to deploy despite facing hardships in real-world settings, potentially leading to unprepared responders.

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Pediatric Emergency Response to the Kahramanmaraş Earthquake: A Field Report from February 6, 2023

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Summary: On February 6, 2023, two major earthquakes, measuring 7.7 and 7.6, struck Kahramanmaraş, Turkey, triggering widespread devastation across 11 provinces and affecting approximately 14.1 million people, including 4.8 million children. With over 50,000 fatalities and 100,000 severe injuries reported, this disaster underscored the critical need for tailored emergency response protocols for vulnerable populations, particularly children.

Under the direction of the Turkish Ministry of Health, a specialized pediatric emergency team, comprising pediatric emergency fellows, specialists, and a pediatric intensivist, was deployed to the earthquake zone. Despite challenging conditions, the team quickly established a triage system, managed a high volume of severely injured children, and addressed life-threatening conditions such as crush syndrome and hyperkalemia. Manual tracking of patients and strategic transfer coordination enabled effective patient flow despite limited resources and adverse weather conditions.

Initial interventions prioritized resuscitation, intubation, and dialysis for patients suffering from crush syndrome and associated hyperkalemia-induced arrhythmias. Due to ICU damage, patients were monitored in makeshift spaces, including corridors. Over the course of three days, the team performed intensive fasciotomies, initiated alkali fluid treatments, and facilitated the transfer of approximately 20 patients per day. The response highlighted critical material shortages, fatigue among healthcare personnel, and the necessity of streamlined transfer systems and real-time communication with supporting organizations.

This field report highlights the importance of pre-established disaster response teams, including pediatric emergency specialists, nursing support, and essential medical equipment, in addressing pediatric-specific needs during disasters. Effective disaster response for children requires continuous advocacy, specialized training, and coordination with regional authorities to ensure comprehensive care. Lessons from this deployment advocate for scalable, organized, and well-resourced pediatric emergency response systems in disaster-prone regions.

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From Expectations to Reality: Evaluating the Achievements and Limitations of the SENS Project in High-Fidelity Environmental Simulation

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Summary: The SENS (Environmental and Neurosensory Simulation) Center was conceived as a cutting-edge facility to train prehospital emergency teams, military personnel, and other crisis responders through high-fidelity simulations. Initial specifications outlined ambitious targets, including 360° immersive video, a temperature range from 0° to 30°C, limited precipitation control, and a basic olfactory spectrum.

Through rigorous benchmarking and international collaboration, the SENS team refined and expanded these capabilities to meet training demands more effectively. Notable advancements include:

- Expanded Temperature Range: Enhanced from the planned 0°–30°C to -5°–40°C, plus simulated heat radiation, allowing for scenarios in extreme cold and heat.
- Precipitation and Snow: Rain simulation was upgraded from 0–10 mm/h to a substantial 0–30 mm/h, with the added capability to generate snowfall up to 5 cm/h—meeting critical training needs for mountain and cold-weather operations.
- Environmental Opacity and Olfactory Simulation: Opacification from smoke and fog now reaches up to 95%, enhancing visibility training under adverse conditions. The range of odors was broadened to include sulfur, rot, blood, and turpentine, providing a sensory depth essential for realistic emergency scenarios. Some limitations arose, primarily due to technical and financial constraints:
- Projection Field: Although initially targeting a 360° immersive experience, technical considerations restricted video projection to a 270° arc.
- Humidity Control: The initial target of modulating hygrometry from 30% to 100% was postponed due to the complexity of integrating humidity control into the existing system within budgetary limits.

Overall, the SENS facility represents a significant leap forward in environmental simulation for crisis training. Despite certain compromises, it has achieved a level of sensory integration that sets a new standard in the field, providing trainees with an unparalleled immersive experience that enhances their readiness for real-world emergencies.

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Building a Culture of Disaster Readiness in Small Island Developing States (SIDS) Through Education and Training: A Field Report of Rural Trinidad and Tobago.

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Summary: Trinidad and Tobago allocates 3.3% of its Gross Domestic Product (GDP) to health care. The most common hazards are storms and flooding, which have a direct financial impact, accounting for up to 5.7% of GDP. Nations and health systems can benefit from savings of up to $13 for every $1 invested in mitigation. East Trinidad is vulnerable to climate change, prompting the need for disaster preparedness by the semi-autonomous Eastern Regional Healthcare Authority (ERHA), which is responsible for the region. Engaging the framework of clinical governance, education, and training was the pillar upon which readiness was developed. This need will continue to be exacerbated by climate change. The ERHA collaborated with the Pan American Health Organization, facilitated through the Ministry of Health, to deliver didactic, multi-sectoral courses designed to improve the response skills of healthcare providers in Mass Casualty Management between 2022 and 2024. This included practical sessions, which were assessed by trained local and regional instructors. There were positive outcomes from this standardized education and training program, involving four cohorts of 285 participants, which included both clinical and auxiliary staff from hospital and community-based services. Immediate assessment demonstrated mean pretest to post-test scores improving from 58% to 74%. Feedback included participants' desire for continuous training and integration of clinical scenarios. The key long-term outcome has been the successful coordination of two drills in 2024 involving multiple facilities. The authors find that this experience demonstrates the importance of cultural paradigm change needed to bridge existing clinical and academic gaps. This can be effectively instituted with strong leadership in the governance of the health care system, which must focus on disaster readiness. Small Island Developing States (SIDS) and other resource-limited countries are encouraged to adopt a similar model of standardized training to establish a foundation for disaster response.

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Exploring the Functionality and Challenges of EMT Members and EMTCC on WHO EMT MDS Data Collection Tools: A Qualitative Study

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Introduction: WHO adopted the Japanese-Surveillance in Post-Extreme Emergencies and Disasters (J-SPEED) concept under the name EMT Minimum Data Set (MDS) as a data collection tool to be used globally in 2017, and it was first utilized in the 2019 Idai Cyclone in Mozambique. Despite its widespread use, there has been a lack of investigation into the perspectives of EMT members and EMT Coordination Cells (EMTCC) regarding the effectiveness and challenges of the WHO EMT MDS tools during disasters. This study examines the effectiveness and difficulties encountered by EMT members and EMTCC using the WHO EMT MDS data collection tools in disaster contexts.

Methods: An exploratory qualitative design was employed. A semi-structured interview was conducted among thirty-three EMT members, and in-depth interviews were carried out among ten EMTCC members overseas via video conferencing. It comprises questions addressing the type of MDS tools used, simplicity, usefulness, timeliness, data quality, and any challenges encountered in data collection and handling during disasters. The data obtained were subjected to analysis through thematic analysis.

Results: Thirty-three EMT members indicated that WHO EMT MDS data collection tools positively impacted data collection efficiency and patient care in disasters. Identified challenges included human resources, technical issues, infrastructure, and items in the MDS tools. The findings from ten EMTCC representatives yielded six themes: accessibility and quality of data collection tools; benefits of MDS data collection tools, provision of training for data entry to new EMT members, challenges faced during coordination; and recommendations to improve the data collection tools.

Conclusion: The outcome of the study will elucidate the strengths and limitations of MDS data collection tools, contributing to evidence for the guidelines and a video for the effective use of WHO EMT MDS tools by EMT members during disasters and medical emergencies for international efforts to improve disaster response outcomes.

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Pilot Training Program on Hands-Only CPR and Choking First Aid for Frontline Police Responders in Rural Nepal

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Introduction: Basic life support (BLS) is an emergency skill that includes performing appropriate cardiopulmonary resuscitation (CPR). Out-of-hospital cardiac arrest (OHCA) is a leading cause of mortality worldwide and is rising in Nepal, the country with high vulnerability, 11th and 16th globally to Earthquakes and multi-hazards, respectively. After an OHCA event, a bystander starting CPR quickly has been shown to increase the survival rate. While the Nepali police are generally the first responders to the disasters and emergencies in rural parts, they are not trained in BLS. This program assesses a pilot training of hands-only CPR and choking first

aid to the Nepal Police and Nepal Army participants in rural Nepal.
Methods: A community-based nonprofit organization, HAPSA-Nepal, coordinated with the local government to pilot this program. The program included pre- and post-tests, lectures, videos, and small group hands-on exercises; facilitators included faculty emergency physicians, residents, and medical officers. Structured pre- and post-test questionnaires, confidence surveys, and skills checklists were conducted. Descriptive analysis examined the respondents' characteristics, and a paired t-test was used to compare pretest and post-test scores.
Results: A total of 126 participants received the training in this pilot phase. Before this training, 98.4% of the participants had not received any CPR training, and 100% of the participants had not received training on first aid for choking. The average pretest score was 4.4 with 95% CI±1.75, and the average post-test score was 8.06 with 95% CI ±1.73 (out of a total of 11). All participants passed the skills assessment.
Conclusion: Locally adapted BLS training programs that included hands-only CPR and choking first aid showed a significant knowledge gain and skills competence among the frontline participants.

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A Year in Review: The Role of the AIDHM in Implementing the ASEAN Leadership Declaration on Disaster Health Management

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Summary: The political commitments outlined in the ASEAN Leadership Declaration on Disaster Health Management (ALD on DHM) have been translated into strategic initiatives. To support the Regional Coordination Committee on DHM (RCCDHM) in implementing the Plan of Action (PoA) for 2019–2025 and beyond, the ASEAN Institute for DHM (AIDHM) was officially launched in October 2023. The AIDHM plays a crucial role in facilitating the academic components of the PoA, encompassing research, training, and knowledge sharing, while also serving as the Secretariat for the ASEAN Academic Network on DHM (AANDHM). This report critically evaluates the organizational and operational dimensions of the AIDHM over its inaugural year (October 2023 to October 2024). Data collection involved a comprehensive review of official documents. The review results indicated that the AIDHM operates under the coordination of the ASEAN Health Cluster 2 alongside the ASEAN Senior Officials Meeting on Health Development. The AIDHM Board of Directors consists of designated representatives of the RCC-DHM of the ten ASEAN Member States, with the Dean of the Faculty of Medicine, Public Health, and Nursing at Universitas Gadjah Mada (FoM-PHN UGM) serving as the head of the AIDHM Secretariat. The AIDHM is structured into four divisions: (1) Training, (2) Research Development, (3) IT innovation, and (4) Administrative. Currently, AIDHM's operationalization is bolstered by the Project for Strengthening ASEAN Regional Capacity on DHM (ARCH Project) and RCCDHM to meet regional PoA targets. Successful activities include the 2nd ASEAN Academic Conference on DHM in October 2023, two joint research projects focusing on emergency medical teams and safe hospitals, and the establishment of the ASEAN Journal of DHM (AJDHM). It is recommended to conduct a thorough review of the organizational structure to assess effectiveness. Furthermore, the establishment of an advisory working group for each division is essential for providing guidance and upholding standards.

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Deployment Surgical Training in the Context of EMT 2030: Preliminary Findings from a Scoping Review

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Introduction: The WHO Emergency Medical Teams (EMT) Initiative necessitates that EMT members receive suitable training to prepare for deployment. The WHO EMT 2030 document aims to establish training curricula to build capacity. This study aims to investigate disaster deployment surgical training to date and map training courses available.
Methods: The PCC framework was used, and the eligibility criteria were set. The Royal College of Surgeons of Edinburgh Library Service was used to conduct searches of: Allied and Complementary Medicine; Cochrane; EMBASE; Health Management Information Consortium; Medline; no date or language limits were applied. Search results were imported to Rayyan and then underwent screening by two independent reviewers. Data were then extracted.
Results: A total of 915 references were returned, 74 papers were included, and 48 directly discussed disaster surgery training courses. Overall, 65 courses were mentioned, the most frequently: Advanced Trauma Life Support: 14%, Terror and Disaster Surgical Care: 14%, Definitive Surgical Trauma Care: 12%, Disaster Response Course: 8%, Advanced

Surgical Skills Exposure in Trauma: 8%, Major Incident Medical Management and Support: 6%, Surgical Training for Austere Environments: 6%, Advanced Course for Deployment Surgery (Cours Avancé de CHIRurgie en Mission EXtérieure): 5%, the remaining 27% accounted for other courses. These publications originated from only 19 countries; authors had affiliations with the USA in 17 cases, Germany in 11, France in 4, Australia in 3, South Africa in 3, Sweden in 3, Canada in 2, the Netherlands in 2, Switzerland in 2, the UK in 2 cases.

Conclusion: This scoping review highlights a growing but still fragmented landscape of disaster deployment surgical training, with a number of frequently cited courses and a concentration of publications from high-income countries. Despite the WHO EMT 2030 emphasis on standardized, assessable, and globally accessible training frameworks, the current literature reveals variability in course offerings and geographic representation.

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Impact of Pre-EMR Staff During the Crowdstrike Outage

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Summary: Electronic Medical Records (EMRs) have become ubiquitous in Emergency Departments (EDs), particularly after the passing of the Meaningful Use Act in 2009. While they offer numerous advantages, they are susceptible to downtime, necessitating a return to paper-based systems. These downtime periods will likely disrupt workflow and patient care, highlighting the importance of effective training and preparation for downtime proceedings.

Preparation for these procedures can be particularly challenging, especially for those with limited experience in paper-based systems. Experienced clinicians, particularly those who practiced medicine before the widespread adoption of EMRs, can play a crucial role in training their colleagues and starting downtime procedures during unexpected interruptions in electronic systems.

During the 2024 CrowdStrike outage, the emergency department experienced an EMR outage spanning two clinical shifts, beginning at approximately 3:09 AM. Faculty interviews were performed as part of the after-action report for this prolonged outage. Post-outage debriefings revealed that overnight staff, many of whom (five out of six attendings) had limited to no clinical experience prior to 2009, struggled with downtime workflows. In contrast, the 7 AM shift, staffed by four attendings with pre-2009 clinical experience, navigated the outage more effectively and with less stress. It was also reported that the experienced overnight Charge-Nurse (with more than 20 years of experience) had critical knowledge of implementing paper downtime procedures and helped guide the overnight staff through the CrowdStrike outage.

This highlights the importance of having experienced clinicians across all shifts to significantly improve downtime operations and facilitate just-in-time training for less experienced staff. As operations rely more heavily on EMRs, maintaining a robust approach to downtime preparedness is essential. By leveraging the expertise of experienced clinicians, healthcare organizations can effectively train their staff, optimize workflow, and ensure patient safety during system outages, which are both scheduled and unplanned.

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Navigating Ultrasound Training in Resource-Limited Settings: A Thematic Analysis of Emergency Medicine Physicians' Experiences

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Introduction: Ultrasound has become a critical diagnostic tool for emergency medicine physicians, especially in low- and middle-income countries (LMICs) where access to advanced imaging technologies is limited. Despite its potential, training emergency physicians in ultrasound techniques in resource-constrained environments presents unique challenges. This study aims to explore the experiences of emergency medicine physicians undergoing ultrasound training in LMICs, focusing on the barriers faced, the benefits realized, and the impact on clinical practice.

Methods: A qualitative, thematic analysis was conducted to examine the experiences of emergency medicine physicians who completed an ultrasound training program in a low-resource setting. Semi-structured interviews were held with participants, and data were analyzed to identify recurring themes related to the training process, challenges encountered, and its effects on patient care. Thematic analysis was used to categorize and interpret the data to provide a comprehensive understanding of the training experience.

Results: The analysis identified three primary themes: adaptability and resourcefulness, learning through practical experience, and the impact of training on patient care. Participants reported challenges related to limited access to high-quality ultrasound equipment, insufficient training materials, and inconsistent mentorship. Despite these challenges, participants noted significant improvements in their diagnostic abilities, particularly in emergency and trauma care. Physicians demonstrated innovative strategies, such as using low-cost portable devices, to overcome resource limitations. Hands-on practice was identified as crucial to skill development, with many participants highlighting the value of real-time feedback and peer collaboration.

Conclusion: Ultrasound training for emergency medicine physicians in LMICs presents both challenges and opportunities. The study underscores the importance of hands-on learning and adaptability in overcoming resource limitations. It also highlights the need for sustained mentorship and support to maximize the impact of training programs. Tailored ultrasound

education, along with continued access to affordable and portable equipment, is essential for improving diagnostic capacity and patient care in resource-limited settings.

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Use of Simulation as a Teaching Tool for Trauma Education and Skills Training in Low-Middle Income Countries- a Multimodal Approach to a Case Series.

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Introduction: Global Emergency Care Skills (GECS), an Irish award-winning charity run by emergency medicine physicians, has recently delivered trauma training in rural Kenya, Lusaka, Zambia, and Gaborone, Botswana. Throughout the period from November 2022 to November 2024, simulation has been used as a reliable and effective tool for educational purposes.
Methods: In-person training was delivered to participants, including doctors, nurses, medical officers, and paramedics. The training involved a structured, simulation-based training program. Scenarios used were structured to represent resource and population-appropriate real-life trauma situations. This allowed participants to practice clinical skills in a safe, controlled environment. Pre- and post-training assessments measured knowledge retention, skill application, and confidence levels.
Results: A significant improvement was observed in knowledge scores, which increased from pre-training to the post training cohort. Participants reported a rise in confidence when managing trauma cases. Feedback indicated they found the simulation exercises relevant and effective in reinforcing their clinical skills. Notably, simulations facilitated team dynamics and communication among participants, which are crucial in trauma care settings.
Conclusion: The use of simulation as a teaching tool in these courses run by GECS proved to be highly effective in enhancing the knowledge base, skill level, and confidence of healthcare providers in rural Kenya, Lusaka, and Gaborone. This case series underscores the value of simulation-based education in preparing clinical staff for real-world challenges in trauma care, promoting better patient outcomes in resource-limited settings. Future studies we hope to explore would include long-term retention of skills and the impact of the introduction of simulation training.

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Participant's Experience of Trauma Theory and Skills Training in Lusaka, Zambia, a Multimodal Analysis.

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Introduction: Global Emergency Care Skills (GECS) is an award-winning Irish non-profit organization founded in 2008 that provides high-quality emergency care training and education to healthcare professionals in low to middle-income countries (LMICs) in Africa, where trauma remains a leading cause of death. This study presents a multimodal analysis of trauma theory and skills training for emergency physicians, nurses, clinical officers, and paramedics in Lusaka. Combining quantitative assessments, qualitative feedback, and observational data to evaluate the effectiveness of different training approaches and the participants' experience of these approaches.
Methods: A mixed-methods approach was employed to analyze the impact of trauma training. Quantitative data were collected through pre- and post-training assessments to measure changes in clinical competence, including technical skills and non-technical skills. Qualitative data were gathered through structured interviews and focus groups with participants and trainers to assess perceptions of the training's relevance, feasibility, and effectiveness. Additionally, observational data from simulated trauma scenarios were analyzed to identify performance improvements and team dynamics.
Results: The multimodal analysis revealed that this trauma training significantly improved the participant's confidence and clinical competence. Quantitative findings showed marked improvements in trauma management skills, especially in areas of rapid assessment and management. Qualitative data highlighted the importance of low-cost, adaptable

simulation methods, such as task trainers and role-playing, which allowed for realistic training despite limited resources. Observational data indicated enhanced teamwork and communication in high-stress trauma scenarios. Participants reported increased satisfaction with training that was tailored to local resource conditions and healthcare contexts.
Conclusion: Skills and simulation-based trauma training, when analyzed through a multimodal lens, prove to be an effective and adaptable tool for improving trauma care in LMICs. By integrating quantitative, qualitative, and observational data, this study demonstrates that such training enhanced both technical and non-technical skills among the course's participants, contributing to improved patient care.

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Disaster Readiness - Improving Education, Training and Simulation

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Summary: NDLS™ 4.0 – Continuously Revised, Continuously Improved Board of Directors*, National Disaster Life Support Foundation™. The National Disaster Life Support Foundation™ (NDLSF™) is pleased to provide updates to the World Association of Disaster and Emergency Medicine (WADEM), at its twenty-fourth biennial Congress, on the fourth edition of its internationally acclaimed Basic Disaster Life Support™ (BDLS®) Course, first introduced

to WADEM at its twenty-third biennial Congress. Maintaining its focus on the PRE-Disaster™ Paradigm and DISASTER Paradigm™, the Course has continuously evolved to expand its accessibility to its increasingly digital worldwide community. It has now been translated into Spanish, Chinese, and Korean. As before, BDLS® 4.0 consists of 4 hours of online prework arranged in 18 topical modules, to be completed before enrollment in a live 4-hour series of 5 instructor-led interactive scenarios, which can be delivered actually or virtually, focused on common problems encountered in disaster healthcare. Comprehensively beta tested by 2,246 students (online component) and 112 students (instructor-led component) at institutions of higher learning within the United States and across the globe, the course has been enthusiastically received. The online component, termed Essentials of Disaster Life Support™ (EDLS®), is now additionally available. At the same time, select modules of interest have been offered to emergency medical teams on-site in Ukraine and elsewhere. Revisions to both the Certified Healthcare Emergency Coordinator (CHEC) Basic and Advanced Courses, which include concepts of meta leadership and novel regulatory issues, have been completed and will be described in detail at the time of presentation.

*Gerald Beltran, Arthur Cooper (chair), Phillip Coule, Cham Dallas, James James, Ira Nemeth, Paul Pepe, Richard Schwartz (vice chair), Raymond Swienton, John Williams (executive director)

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Retrospective Analysis of Prehospital Tourniquet Use in Southeast Michigan

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Introduction: External hemorrhage is a leading preventable cause of death in prehospital settings. Despite established protocols and training, the application and outcomes of tourniquet use vary. Region 2 South, an area of four counties in southern Michigan containing 2.5 million people, implemented tourniquet application protocols and training programs. This study aims to analyze the effectiveness and accuracy of tourniquet applications.
Methods: Retrospective analysis of tourniquets from October 2019 to December 2023 that included patients presenting to level 1 and level 2 trauma centers with pre-hospital tourniquet placement. Data collected included personnel applying tourniquets, mechanism of injury, appropriateness and correctness of indications, associated interventions, and complications.
Results: 473 tourniquets were applied. EMS performed (218, 46.8%), followed by fire/police (196, 42.1%), and the ED (19, 4.1%), and bystander applied in 53 cases (11.3%). The mechanisms of injury were gunshots (185 cases, 39.5%), lacerations (59 cases, 12.6%), and stab wounds (45 cases, 9.6%). 78.3% of tourniquets met appropriate indications, and 89.3% were applied correctly. The odds of applying with appropriate indication were lower when bystanders performed the procedure (OR 0.33, 95% CI 0.18 - 0.60), as were the odds of correct application (OR 0.40, 95% CI 0.19 - 0.87). Data on interventions were missing (54.8%), but when available, it showed blood product administration in 7.8% of patients, suturing in 33.3%, vascular repair in 17.6%, and 27.1% of patients required multiple interventions. Complications related to tourniquets occurred in 2 (0.42%) cases.
Conclusion: EMS and law enforcement are primary applicers of tourniquets, with a significant portion applied correctly and appropriately. There is a lower likelihood of proper application by bystanders. The study indicates tourniquets are generally applied correctly and effectively, with minimal complications. This underscores the importance of continued training and data collection improvements to enhance prehospital care outcomes, as well as the importance of providing continued and further training to the public.

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A Comparison of Three Guidelines on Recommendations of Antidote Storage in the Hospital

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Introduction: Antidote stocking is a crucial part in the treatment of poisoned patients. There are multiple guidelines providing recommendations on the stocking of antidotes. This study aimed to compare the recommendations in three different guidelines.
Methods: Three guidelines on antidote stocking were compared: the United States' Expert Consensus Guidelines for Stocking of Antidotes in Hospitals That Provide Emergency Care, the United Kingdom's Royal College of Emergency Medicine and National Poisons Information Service Guideline on Antidote Availability for Emergency Departments, and Australia's Queensland Poisons Information Centre (QPIC) guideline. The comparison focused on recommendations for antidote availability and stocking quantities.
Results: The US, UK, and Australian guidelines made recommendations for 45, 40, and 40 antidotes, respectively. Antivenom recommendations differed significantly among the guidelines. Only the US and UK guidelines further categorised antidotes based on urgency, providing recommendations on whether antidotes should be immediately available or within an hour. The Australian guideline only provided recommendations on whether to stock the antidote, without specifying urgency. The three guidelines concurred in their recommendations for 22 antidotes that should be stocked in hospitals.

The US and UK guidelines provided recommendations on the quantities of each antidote to be stored for treating an adult during the first 24 hours. The UK guideline also indicated any special storage conditions. In contrast, the Australian guideline recommended varying quantities of antidotes to be stored according to the locality of health facilities, with tertiary

facilities recommended to keep the largest quantities and rural facilities the least.
Conclusion: The recommendations from various guidelines concurred on most antidotes to be kept. Anti-venom recommendations differed, likely due to geographical variations. Storage quantity recommendations were based on amounts for initial treatment up to 24 hours or practical considerations such as locality.

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Age of Resuscitation Blood Products Is Not Associated With In-Hospital Mortality Among Trauma Patients: A Retrospective Cohort Study

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Introduction: Transfusion of packed red blood cells (PRBC) or low-titer group O whole blood (LTOWB) has become standard practice in trauma patients with significant blood loss. As blood ages, it undergoes metabolic and structural changes. This study aimed to test the association between the age of PRBC/LTOWB and mortality among adult trauma patients.
Methods: This is a retrospective cohort study at an academic level one trauma center. Adult trauma patients who received at least one unit of PRBC or LTOWB within the first hour of arrival to the emergency department (ED) between January 2016 and December 2019 were included. The primary outcome was in-hospital mortality. Multivariable logistic regression models were used to test the associations between the mean age of PRBC and LTOWB units transfused during the initial 24 hours and in-hospital mortality.
Results: Of 388 patients included, 362 received PRBC and 121 received LTOWB. In-hospital mortality occurred in 31% of patients. The median (interquartile range) mean age of transfused PRBC units was 21 (16-26) days, and LTOWB units was 11 (9-12) days. Neither age of PRBC nor LTOWB was found to be associated with in-hospital mortality: PRBC adjusted odds ratio (aOR) = 0.99 (95% CI 0.95 to 1.03) and LTOWB aOR = 1.12 (95% CI 0.88 to 1.41).
Conclusion: The mean age of LTOWB or PRBC units transfused during the first 24 hours after presenting to the ED for a traumatic injury was not found to be associated with in-hospital mortality.

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Lecture on Hospital Disaster Prevention for Medical Staff in ASEAN Countries - From an Architectural Perspective

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Introduction: Hospital disaster prevention is an important issue for all countries. However, it is difficult for medical personnel with limited architectural knowledge to understand hospital architecture and facilities. In addition, special ideas are needed to help medical personnel understand hospital architecture in ASEAN countries with different legal systems. This study compares hospital disaster prevention lectures in Japan with lectures in the JICA Knowledge Co-Creation Program (Country Focus) "Disaster Health Management in ASEAN Countries (in Japan) (hereinafter referred to as the KCCP) to discuss better lecture content.
Methods: List and compare the content of lectures on hospital disaster management in Japan with that one in the KCCP; discuss better lecture content based on questions from the two-year KCCP.
Results: The purpose of lectures on hospital disaster prevention in Japan is to learn about disasters, hospitals, and what the staff should do. In the 90-minute lecture, the main focus is on hospital risks, damage cases, and countermeasures. In particular, the "Countermeasures" section explains hospital construction, changes in building codes and disaster medical systems, earthquake resistance rates, design guidelines for new hospitals, strengthening existing hospitals, and hospital BCP. The 90-minute lecture in the KCCP included an explanation of building safety, which is common to all countries.
Conclusion: ASEAN participants asked about measures against high winds and flooding. This is because most of the lectures were earthquake case studies. In the future, it would be a good discussion to have ASEAN countries provide hospital damage photos, and hospital architecture will be better understood.

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Optimizing Hospitalized Newborn Evacuation: A Novel Triage System for Prioritizing the Order of Transportation by the Medical Care Task

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Introduction: During the 2016 Kumamoto earthquake, a grade 1–4 evacuation triage (Simple Triage and Rapid Treatment for Neonates, START-Neo) was used to determine the evacuation order at a tertiary neonatal intensive care unit (NICU). However, most newborns are classified as grade 2 or 3, which makes it difficult to determine the order of evacuation. A five-category, 0–12 scale (Neonatal Extrication Triage, NEXT) was developed to reflect the medical care provided. This retrospective observational study investigated whether the use of (i) a triage system (vs. random orders) and (ii) NEXT (vs. START-Neo) improved NICU evacuation efficiency.

Methods: NEXT and START-Neo were assessed over 49 days. Given that the evacuation was performed in either ascending or descending order of patient severity, an efficient triage system was defined as one that precisely reflected patient severity. The severity of newborn patients at the time of triage assignment was determined using a Neonatal Therapeutic Intervention Scoring System (NTISS). The Total Evacuation Score (TES) was defined as the time integral of the NTISS scores of newborns waiting for evacuation and remaining within the NICU from the start to the completion of the evacuation. The TES was compared between (i) no triage, (ii) NEXT, and (iii) START-Neo. A computer-based evacuation simulation was conducted using all possible combinations of evacuation orders (NEXT and START-Neo) or randomly extracted combinations (no triage).
Results: Compared to no-triage, both NEXT and START-Neo led to a reduction in TES throughout the study period. NEXT was superior to START-Neo on 34 of 49 days and showed no difference on 10 days.
Conclusion: Triage systems are crucial for improving NICU evacuation efficiency. NEXT, an improved triage system, appears likely to reduce the overall risk of newborns remaining in a damaged NICU before transportation.

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Old Dogs, New Tricks, Same Emergencies: Mapping the Gap in Disaster Medicine Training in Israel

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Introduction: Emergency medicine and trauma surgery have been considered the leading disciplines in managing mass casualty incidents (MCI); however, considerable gaps in MCI-related knowledge, training, and preparedness of these disciplines have been observed.
Methods: An anonymous survey study was conducted to collect data about MCI training and preparedness from physicians specializing in Pediatric Emergency Medicine (PEM), Emergency Medicine (EM), and Trauma Surgery (TS) in Israel.
Results: Forty-eight responders completed the survey; of them, 41% were PEM physicians, 37% were EM physicians, and 22% were TS physicians. Thirty-eight percent were junior specialists, followed by fellows and experienced specialists (19% and 19%, respectively). Approximately 50% of the respondents had received some form of disaster training, primarily through MCI drills, indeed, MCI drills were perceived as the efficacious method of training among all other options. While fellows' lack of interest was reported as the main suggested barrier for MCI training, interest and relevance of such training were the highest among this group, with increasing loss of interest among senior physicians.
Conclusion: This survey highlights the need for disaster medicine training and emphasizes its importance early in the training of PEM, EM, and TS physicians.

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Insight Into Complementary and Alternative Medicines: Stakeholders View on Regulatory Practices.

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Introduction: There is a geometric increase in the practice of complementary and alternative medicine in Nigeria, yet there is no adequate regulation that aims at protecting public interest and guiding general practices. Regulatory practices are not being complied with because of poor implementation of these regulations. There is a need to analyze the stakeholders involved in these regulatory practices to identify their interests and influence on the regulatory practices. It is important to identify the challenges encountered and the facilitators to the effective regulation of CAM in Nigeria. These analysis has an impact on health system strengthening.

This work primarily aimed at identifying the stakeholders' views and perspectives toward the regulatory practices of CAM, identifying the stakeholders' interest and influence on the regulatory practices of CAM. It further identified the challenges and enablers of these regulatory practices.
Methods: This study utilized a qualitative in-depth interview, which involved a purposive sampling method of twelve (12) respondents. A combination of deductive and inductive thematic analysis was utilized to analyze the manual and electronic transcripts from interview tape recordings.
Results: There was an agreement amongst stakeholders that more actions need to be taken for proper and adequate regulatory practices to be put in place. Deductive and inductive thematic analysis was used to identify the regulatory practices involved in registration, labeling, and advertising. Also, interests and influences were identified together with the challenges and facilitators of these regulatory practices. Stakeholders recommended the active participation of the government and practitioners. They also identified the importance of continuing policies that make CAM studies worthy of Public Health interest.
Conclusion: Stakeholders' interests and influence are an integral part of decision-making towards the regulatory practices of CAM. Regulation of CAM is not an easy task, as there are many challenges encountered.

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In-situ Simulation for Resuscitation Leadership: Enhancing Teamwork and Interprofessional Education in Residency Training

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Introduction: Junior residents in the SingHealth Emergency Medicine Residency Program receive 16 hours of protected time monthly for formal teaching sessions. consisting of classroom teaching and hands-on sessions in simulation centers. Evaluation of the program indicated gaps in the training (from program evaluation committee, faculty and residents survey, 360 evaluations, clinical competency committee). Specifically, residents reported i) limited leadership opportunities in resuscitation scenarios, ii) lack of formal inter-professional education (IPE), and iii) insufficient exposure to department-specific resuscitation setups and workflows.

To address these gaps, in-situ simulation training was introduced, with the following objectives:

- Help residents develop effective team leadership skills, with a focus on non-technical skills.
- Foster IPE, enhance collaboration, communication, and role clarity within the team.
- Build familiarity with departmental resuscitation setups and workflows by training in actual work environments.

Methods:

- Session frequency and duration – Three half-day in-situ training sessions during junior residency
- Scenario rotation and leadership opportunities – residents take turns leading a variety of resuscitation scenarios, each focusing on department-specific workflows and system-based practices.
- Hi-fidelity manikins to simulate realistic physiological responses, with technical support from simulation center staff.
- Nursing participation to enhance the realism of scenarios and foster interprofessional interactions.
- Specialist-led debriefings

Results: Post-training feedback was highly positive. Key highlights include i) High satisfaction scores - the mean score for the session was 4.8 out of 5, a score notably higher than most other training sessions, ii) Perceived improvement in critical thinking, clinical decision-making, and confidence in leading resuscitations, iii) Increased familiarity with emergency department workflows and equipment.

Conclusion: Utilization of in-situ training could better equip junior residents with the skills required to lead resuscitation teams as they progress into senior roles. Further methods of assessment (e.g., direct observation of leadership and decision making during scenarios by faculty using structured assessment tools) are planned to assess knowledge gain and behavioral changes.

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Education for Earthquake Disaster by the Disaster Response Committee of the Japanese Orthopedic Association

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Summary: In Japan, education on disaster management began gradually after the Great Hanshin-Awaji Earthquake and has been incorporated into medical education in recent years. However, when I was a student, there was virtually no such education, and even after I became a doctor, I only participated in in-house disaster drills. In recent years, however, earthquakes, heavy rains, and other disasters have become more frequent in Japan, and it has become clear that in-hospital drills are not sufficient to cope with such disasters.

The Japanese Orthopedic Association is conducting triage training to first help people understand the basics of disasters, then to formulate a policy in the event of a disaster, and finally to pick up severely injured patients from among those who are generally considered as inherited orthopedic conditions. The training is conducted as a web based exercise, as it was started in 2020, the year of the coronary pandemic. The training is being conducted in each prefecture and has now been held in each prefecture. In the future, we plan to further strengthen our preparedness for future disasters by preparing review materials for reviewing the content of the training and considering training not on a prefecture-by-prefecture basis but on a wide area basis, and face-to-face training.

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Impact of a Full-Scale Mass Casualty Exercise on Emergency Department Operations at a Level One Trauma Center and Tertiary Referral Hospital

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Introduction: Emergency departments (EDs) must be prepared for sudden surges of critically ill patients. To maintain readiness, United States (U.S.) hospitals conduct full-scale mass casualty (MCI) exercises, though few studies examine their impact on real-time patient care in active EDs. This study addresses this gap by evaluating the operational impacts of a full-scale exercise (FSE) conducted at a major U.S. level one trauma and tertiary referral center. On a Wednesday morning, 78 moulaged patients tested the ED's surge capacity with a layered staffing model simulating disaster response demand. This study aims to determine if high-fidelity FSEs can integrate into active EDs without affecting real patient care.

Methods: Data from the electronic medical record was collected over two time periods on the exercise day and control days: the exercise (6 hours) and impacted clinician's shift (14

hours). The primary outcome was the median length of stay (LOS) for real patients. Secondary outcomes included door-to-doctor time, time to disposition, and arrival-to room time. Medians from the exercise day were compared to control dates (four preceding and four following Wednesdays) using the Mann-Whitney U test.

Results: Median LOS during the exercise was 164 minutes, while control days during the same time were 162 minutes. Median LOS for the impacted clinician shift during the exercise was 190 minutes, while control days were 174 minutes. For the exercise period, no statistically significant differences were found for LOS and all secondary outcomes. For the impacted clinician shift, only LOS demonstrated a statistically significant difference (p=0.043).

Conclusion: With strategic planning, FSEs can be integrated into active EDs with minimal impact on patient care and operations. FSE planning should aim to minimize disruptions and include objective tracking metrics to evaluate the success of these efforts. Future studies should assess patient outcomes, return visits, and clinician cognitive load for a more comprehensive evaluation of FSE impacts.

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Tabletop and Functional Exercises: Which Is Better for Hospital Mass Casualty Incident Preparedness?

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Introduction: Mass casualty incidents (MCIs) are major emergencies in emergency departments, necessitating effective training for healthcare personnel. Tabletop exercises (TTx) and functional exercises (FE) are two non-disruptive training methods that can simulate MCI responses. However, little research has compared the effectiveness of these two methods. This study aims to evaluate the effectiveness of TTx and FE as training tools for MCI preparedness.

Methods: Participants were divided into two groups: the T group (trained via TTx) and the F group (trained via FE). Both exercises simulated a train station explosion, requiring the hospital to manage 26 simulated casualties. TTx involved instructor-facilitated group discussions, while FE required role-playing in a simulated hospital setting. Participants were assessed before the exercise, immediately after, and six months post-exercise. Evaluations included confidence in MCI response, willingness to attend future training, willingness to participate in real MCIs, knowledge of disaster medicine, and familiarity with MCI response plans. Data were analyzed using ANOVA and paired t-tests to assess short- and long-term effects. Additionally, participants provided feedback on the factors that most contributed to their learning.

Results: Both exercises significantly improved confidence in MCI response, with TTx having more sustained effects. FE increased willingness to attend future training and participate in real MCIs, though effects diminished after six months. Neither exercise significantly affected disaster medicine knowledge. Familiarity with MCI response plans improved in both groups but returned to baseline after six months. Participants rated both exercises as valuable learning tools, citing scenario-based learning, greater engagement, interactivity, and real-time feedback as key factors.

Conclusion: TTx and FE are both valuable for hospital disaster preparedness, with each offering unique advantages. Hospitals should select the exercise format that best suits their staff and needs. Regular re-training within six months may be required to sustain preparedness.

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Report on the First Regional Support Nurse Training Workshop

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Summary: This study reports on the First Regional Support Nurse Training Workshop, held in July 2024. The workshop was designed to enhance the disaster response capabilities of nursing professionals, addressing challenges in regional healthcare during large-scale disasters. The workshop was organized in response to a decline in the number of registered disaster support nurses in Hamamatsu City. To address this issue, the Regional Disaster Preparedness and Human Resources Education Center (R-CEC) collaborated with Hamamatsu City to develop a practical disaster training program aimed at increasing the number of disaster support nurses and improving their preparedness for disaster scenarios. The workshop curriculum was created based on participants' needs and included lectures, hands-on practical exercises, and group discussions. These sessions focused on improving nursing professionals' ability to respond quickly and accurately during disaster situations. Fifty-three nursing professionals from the region participated in the workshop, which took place on July 21, 2024. After the workshop, a review session was conducted to gather feedback from participants, allowing for discussions on the workshop's effectiveness and potential areas for improvement. The workshop successfully provided participants with essential disaster response skills and knowledge. The practical exercises, in particular, were highly rated for their relevance to real-world scenarios. The feedback session revealed that participants felt more confident in their disaster response abilities, and suggestions for further improving the workshop's content and structure were noted. The First Regional Support Nurse Training Workshop achieved its goal of enhancing disaster preparedness among nursing professionals. This initiative is expected to contribute significantly to the disaster resilience of regional healthcare systems by ensuring that nursing staff are better equipped to handle emergencies. Future workshops will aim to build on this success, further expanding the program and incorporating participant feedback for continuous improvement.

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Disasters & Diseases: An Online Role-Playing Platform for Mass Casualty Incident Simulation and Education

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Introduction: The COVID-19 pandemic caused residency programs to rapidly transition to using virtual learning for didactic education. A tabletop game-style simulation of a mass casualty incident (MCI) was planned for the summer of 2020; rather than cancel it, the authors developed a method to run the simulation utilizing an online gaming platform (Roll20) to create an MCI drill. This model of virtual, game-style simulation has implications for education across all levels of training, making large-scale MCI simulations available to groups that otherwise would not have the opportunity or resources to participate in person.
Methods: This study utilized a cross-sectional survey of fifteen emergency medicine residents who participated in a virtual MCI simulation. The survey assessed learners' perceptions of the simulation, focusing on preparedness, knowledge gained, impact on clinical practice, and utility and quality of the virtual tool. Survey items included Likert-scale and open-ended questions.
Results: Seven individuals responded to the survey. 85.7% of respondents felt more prepared to deal with an MCI after the exercise and reported that this exercise was practice-changing. 85.7% reported that the virtual platform was a useful educational tool in disaster management and would be useful for other topics. Most participants (57.2%) felt that the pre-exercise instructions were challenging to understand, but 71.5% felt that, nonetheless, the learning objectives were achieved. Open-ended comments included a sense that this teaching method was "fun, innovative, and engaging," but required more detailed pre-learning to ensure that all individuals could navigate the platform well.
Conclusion: An online role-playing platform is an effective, engaging method of conducting MCI exercises that improves knowledge and changes practice. Remote learning methods have the potential to increase participation in MCI simulations. This study is limited by the small group that participated. A larger study with wider participation is a promising future avenue for research.

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Use of VR Video on Disaster Medicine in Pre-Graduate Education of Medical Students

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Introduction: In Japan, where natural disasters are frequent, disaster medical education is becoming increasingly important in pre-graduate medical school education, but it is difficult to conduct medical training and practice at actual disaster sites. In cooperation with a private company, we have created a VR video that simulates medical care at a disaster site and utilized it for clinical training of medical students. We report on the usefulness of the VR-based education together with a student survey.
Methods: The VR video was created based on a scenario in which many people were injured when a train derailed and overturned due to a major earthquake, and a rescue team was dispatched from the university hospital. The video enables the viewer to learn about the activities of the medical team from the perspective of a doctor and to learn about on-site safety management by reproducing the disaster scene in computer graphics. In the clinical training of medical students, lectures were given using the VR video, and practical training for patient examination was conducted using a simulator.
Results: In a student survey, many responded that the VR video was useful for learning about medical treatment at disaster sites.
Conclusion: In Japan, where natural disasters occur frequently, the use of VR video in pre-graduate education for disaster medicine is considered useful.

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From Classroom to Crisis: Transforming Medical Training with Game Based Learning

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Introduction: Preparing medical students for disaster response is a complex challenge that goes beyond theoretical knowledge. To address this, an innovative educational tool in the form of an interactive board game has been created. The game is designed to simulate real-life emergency scenarios, engaging students in critical thinking, teamwork, and effective decision-making under pressure.
Methods: The board game utilizes open-source guidelines to simulate realistic emergency scenarios, requiring strategic decision-making. Players assume roles such as Team Leader, Doctor, Medical Support, Logistics Coordinator, and Psychologist, each contributing unique skills. Game mechanics include triage, resource management, and resolving ethical dilemmas, such as prioritizing care with limited supplies or addressing psychological distress. Scenarios progress through timed rounds, emphasizing urgency and collaboration.
Results: The board game was evaluated internally for educational content and design feasibility. The scenarios integrate real-world medical protocols, emphasizing decision-making under pressure. The game's theoretical framework was validated against established emergency medicine practices, highlighting its potential to foster engagement and collaborative learning among medical students. The evaluation focused solely on aligning the game content with open-source medical standards and ensuring an accurate representation of crisis conditions.
Conclusion: This game introduces a fresh approach to training healthcare students in disaster response. Combining realistic scenarios with a strategic, team-based format creates a stimulating and effective learning environment. The game shows

potential as a valuable tool for medical education, providing a risk-free environment for developing critical skills in disaster response and preparing students to handle real-world crises confidently and competently.

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Building Operational Readiness–Educational Insights from Exercise Kingfisher for Mass Casualty Incidents

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Summary: Exercise Kingfisher, conducted in Singapore's Tan Tock Seng Hospital (TTSH) on September 21, 2024, simulated a hospital-wide response to a mass casualty event involving hazardous materials (HAZMAT) and radiation threats. The exercise aimed to validate the Emergency Department's (ED) Civil Emergency Plan and assess operational readiness.

A multi-disciplinary team of physicians, nurses, and operations staff participated, ensuring a cohesive response.

Disaster education was integral to the success of Exercise Kingfisher. Over 1,400 hospital staff underwent comprehensive training, including the use of HAZMAT personal protective equipment (PPE), decontamination procedures, field medical team training, and critical care response. Regular email reminders and WhatsApp group updates kept staff informed about evolving workflows, ensuring real-time communication and readiness. Evidence based practices, including decontamination wash timings and care for the pediatric casualty, were integrated. To improve overall situational awareness and provide real-time casualty numbers, we leveraged technology. Virtual reality (VR) was employed for training decontamination staff, which optimized the training of a large number of staff within a short period. Technology integration improved patient tracking, resource allocation, and inter departmental coordination.

Exercise Kingfisher validated the effectiveness of staff training and protocol updates. The hospital managed 204 casualties in four hours, demonstrating a high level of operational readiness. VR technology enabled more staff to be trained, and real-time communication tools improved coordination. The multi-disciplinary approach expedited triage and treatment, reducing response times and increasing patient management efficiency.

Exercise Kingfisher has highlighted the importance of disaster education and protocol revision in preparations for a mass casualty incident. By integrating updated evidence, enhancing staff training, and employing a multi disciplinary approach, TTSH Emergency Department demonstrated a readiness to manage HAZMAT and radiological threats. Future exercises will continue to build on these successes, focusing on refining educational programs and strengthening interdepartmental collaboration.

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From Theory to Practice: The Impact of In-Situ Full Scale Drills on Mass Casualty Incidence Preparedness among Emergency Medical Technicians and Emergency Department Staff in a Peripheral Hospital in Lebanon.

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Introduction: The effective management of mass casualty incidents (MCIs) is essential for all emergency medical services (EMS) and emergency department staff, though training at peripheral or satellite hospitals is often insufficient. Globally, these hospitals often receive an influx of patients from MCIs, but do not have the resources available in the larger hospitals. This study used an in-situ drill and retrospective pre-post drill surveys to assess the impact of this type of drill on improving preparedness to handle MCIs in a peripheral Emergency Department in Lebanon.
Methods: An in-situ full-scale drill was conducted in which EMS personnel triaged patients on-site and made transport decisions to a participating peripheral hospital. Hospital staff received the patients, triaged, and initiated proposed management. Retrospective pre-post surveys were distributed to 55 participants for self-assessment of knowledge and comfort with multiple competencies related to preparedness.
Results: 34 surveys were filled out. Preliminary results indicate the drill significantly enhanced participants' preparedness, with notable improvements in all areas. Statistical analysis of the data using a combination of statistical techniques is currently underway to confirm these findings. This will provide a comprehensive understanding of how effective the disaster drill was in improving preparedness and whether certain factors influence the outcomes.
Conclusion: The findings underscore the critical role of in-situ full-scale drills in enhancing the preparedness of EMS and hospital staff for mass casualty scenarios, specifically in peripheral hospitals. Continuous training and the implementation of realistic simulations are recommended to address remaining gaps and ensure comprehensive readiness for future MCIs as these hospitals are likely to receive patients from an MCI. This study highlights the importance of including both EMS and peripheral hospitals in MCI preparedness and further development of MCI training programs focused in these settings.

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Approaches to Reduce Anxiety About Radiation Exposure Among Medical Personnel Who Deal with Radioactive Contaminated Patients

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Introduction: When dealing with radioactively contaminated patients, medical staff often experience anxiety, even though their health is unlikely to be affected by radiation exposure. An application has been developed to simulate the exposure

dose to medical personnel by inputting the contamination status of the patient. In addition, it was examined whether the application could be used for radiation exposure medical education to reduce the concerns of medical personnel about radiation.
Methods: The application utilizes the Particle and Heavy Ion Transport code System (PHITS), a radiation behavior code, to simulate the geometry of a supine patient and a medical staff member standing alongside. Simulations were conducted assuming contamination of the patient with various radionuclides. Using this data and FileMaker Pro, an iOS application was developed that allows for an intuitive calculation of exposure doses. This application has been incorporated into radiation emergency medical education.
Results: Simulations revealed that even in scenarios involving radionuclide release from a criticality accident, such as significant deposition of radioactive iodine or cesium on the patient's body surface, medical personnel are unlikely to receive doses exceeding 100 mSv. Furthermore, medical doctors, nurses, and radiological technologists who underwent radiation protection training demonstrated significantly reduced anxiety regarding radiation exposure both before and after the training.
Conclusion: Providing medical personnel with an estimate of their potential exposure doses during the treatment of contaminated patients has proven effective in reducing anxiety. Continued basic research and education on low frequency events like radiation accidents remain crucial.

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Factors Affecting the Accuracy of Prehospital Triage Application and Prehospital Scene Time in Simulated Mass Casualty Incidents

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Introduction: The contemporary management of mass casualty incidents (MCIs) relies on the effective application of dedicated response plans based on current best evidence. There is limited evidence regarding the factors influencing the accuracy of first responders (FRs) in applying the START protocol and the associated prehospital times during the response to MCIs. The study aims to investigate factors affecting FRs' accuracy in performing prehospital triage in a series of simulated mass casualty exercises. Secondly, factors affecting triage-to-scene exit time were assessed.
Methods: This retrospective study focused on simulated casualties in a series of simulated MCIs Full Scale Exercises. START triage was the triage method of choice. For each Full-Scale Exercise (FSEx), collected data included exercise and casualty-related information, simulated vital parameters, simulated anatomic lesions, scenario management times, and responder experience.
Results: Among the 1090 casualties included, 912 (83.6%) were correctly triaged, 137 (12.6%) were overtriaged, and 41 (3.7%) were undertriaged. The multinomial regression model indicated that increasing HR (RRR = 1.012, p = 0.008), H-AIS (RRR = 1.532, p < 0.001), thorax AIS (RRR = 1.344, p = 0.007), and lower ISS (RRR = 0.957, p = 0.042) were independently associated with overtriage. Undertriage was significantly associated with increasing SBP (RRR = 1.013, p = 0.005), AVPU class (RRR = 3.104 per class increase), and A-AIS (RRR = 1.290, p = 0.035). The assigned red code (TR = 0.841, p = 0.002), expert providers (TR = 0.909, p = 0.015), and higher SPO2 (TR = 0.998, p < 0.001) were associated with a reduction in triage-to-scene departure time. Conversely, increasing ISS was associated with a longer triage-to-scene departure time (TR = 1.004, 0.017).
Conclusion: Understanding the predictors influencing triage and scene management decision-making by healthcare professionals responding to MCIs may facilitate the development of tailored training pathways regarding mass casualty triage and scene management.

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Awareness of Occupational Hazards Among Students of Emergency Medical Services

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Introduction: Healthcare workers, including paramedics, are at high risk of occupational hazards such as physical, biological, chemical, and mechanical dangers. The US Department of Labor reports an occupational injury rate of 16.8% in healthcare, compared to 4.8% in other industries, making healthcare professionals twice as likely to suffer work related illnesses or injuries. Assessing Emergency Medical Services(EMS) students' awareness of these risks is critical, yet research in this area remains limited. This study evaluates the awareness of occupational hazards among EMS students in the Makkah region, Saudi Arabia, and examines how this awareness influences their understanding of health and safety practices.
Methods: A cross-sectional quantitative study was conducted among EMS students from three universities in Makkah. Awareness of occupational hazards was assessed using a structured questionnaire based on three validated studies evaluating knowledge of hazards, safety measures, and sources of information.
Results: The response rate was 102% of the sample size. Results showed varying levels of awareness regarding occupational hazards. Chemical hazards were the most recognized, identified by

78% of students, while mechanical hazards were less known (32%), and ergonomic hazards were the least understood (20%). Most students encountered aggressive patients 1-3 times annually. Media was the primary information source for 26.7% of respondents, indicating gaps in formal education.
Conclusion: This study highlights the current state of occupational hazard awareness among EMS students in the Makkah region. While students show relatively high awareness of safety measures, their reliance on media underscores the need for improved educational programs. Additionally, frequent encounters with aggressive patients emphasize the importance of incorporating de-escalation techniques into EMS training.
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Impact of Heatwaves on Emergency Departments in Singapore: A Qualitative Study on Perceptions of Healthcare Workers

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Introduction: Climate change is a significant threat to human health. It is affecting emergency medicine practice through the increase in climate-related disease patterns and shifts in epidemiology for conditions diagnosed and treated in emergency departments (EDs), especially for vulnerable populations. Singapore is ranked 187/192 on the World. Risk Index based on the 2022 World Risk Report. Singapore has thus far been fortunate to be spared from natural disasters such as earthquakes, typhoons, and volcanic eruptions. There has been occasional flooding during heavy rain, but it is not sustained and does not significantly impact transport systems. The objective is to assess the current state of knowledge and perceptions towards heatwaves of emergency department (ED) healthcare workers in Singapore and investigate potential strategies and solutions to improve the knowledge and readiness.
Methods: A qualitative study was conducted in Khoo Teck Puat Hospital in Singapore, using semi structured face-to-face interviews with an open-ended interview guide, on emergency physicians and registered nurses of various lengths of work experience actively working in the ED. The thematic analysis approach was employed, which involves memo-writing, coding, and theme development with constant comparison.
Results: Six themes— (1) Knowledge and understanding of Extreme Weather Events, (2) Knowledge and understanding of Heatwaves, (3) Impressions of vulnerability to heatwaves, (4) Measures or factors to help prevent heat related illness, (5) Perceived impact of heatwave on emergency departments, and (6) Potential strategies and solutions— emerged and were presented in an interactive framework.
Conclusion: There is basic foundational knowledge, with more education and training required, especially targeting the knowledge gaps identified. There is also a need to increase awareness of heatwaves, their impact on health, and to develop comprehensive extreme heat response plans. The findings provide a framework for emergency departments to guide their preparations for inevitable heat waves and their associated health impacts.
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Association between Willingness to Accept and Readiness to Assist during Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) disasters at Regional Medical Care Support Hospitals in Japan

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Introduction: According to The International Disaster Database, one-third of disasters worldwide are technological. In Japan, chemical, biological, radiological, nuclear, and explosive (CBRNE) disasters are less common than natural disasters. However, every hospital is required to respond, because once a disaster occurs, victims might rush to the nearest hospital regardless of the hospital's preparedness. The present study aimed to determine the association between the readiness and willingness of regional hospitals to accept victims of CBRNE disasters.
Methods: Physicians and nurses of middle rank and above who are currently working in the emergency departments of 685 regional medical care support hospitals were asked to respond to a questionnaire about their past experiences and preparedness with regard to CBRNE disasters and their willingness to respond if victims came to the hospital in the future. A binomial logistic regression analysis was used to confirm this association. The survey was approved by the institutional ethical review boards of the affiliated universities.
Results: 105 physicians (15.3%) and 113 nurses (16.5%) responded to the survey. Regarding the respondents, 76.2% (80) of physicians and 69.0% (78) of nurses belonged to disaster-based hospitals. A total of 67.6% (71) of physicians and 54.9% (62) of nurses had previous CBRNE disaster response experience, including pandemics. Willingness to receive victims was significantly associated with the learning experience of the CBRNE disaster (physicians only), working at a disaster-based hospital, and having a history of victim acceptance training for chemical disasters, including terrorism. For nurses, the presence of manuals was associated with their willingness to accept victims of non-terrorist chemical, radiological, and explosive terrorist disasters.
Conclusion: It is hoped that regional hospitals will improve their preparedness for CBRNE disasters. As the effectiveness of manuals and training for responding to victims has been suggested, disaster-based hospitals are expected to support these.
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Individual and Organization Training for Developing Health Disaster Management in Indonesia: Academic Roles

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Introduction: According to the Indonesia Index Disaster Risk 2023, disaster events occurred in almost all regions of Indonesia. Out of 514 districts/cities, disasters occurred in 451, or 87% of the total. There are many strategies and regulations issued by the Governments, one of which is the Regulation of the Ministry of Health MoH Regulation number 75 of 2019 concerning Health Crisis Management. The Center for Health Policy and Management (CHPM) at the Faculty of Medicine, Public Health and Nursing, University Gadjah Mada (FK-KMK UGM), as a policy center in academic settings, must integrate these policies to develop programs. What support can be provided to develop disaster health management?
Methods: A review of all field report activities, webinars, seminars, training, workshops, and mentoring that had been conducted by Division Disaster Health Management, CHPM FK-KMK UGM during 2024.
Results: There are two activities conducted for individual training: the Webinar on Disaster Health Management and the Seminar on Emergency Medical Team. Five activities for organization training that all aim to arrange and assist public health centers, hospitals, and district health offices to prepare a Health Disaster Plan. The total number of participants in individual training was 195, and in organizational training, there were 25 institutions. The evaluation result showed that participants need all this training, and it is very relevant to their work. In addition to increasing their capacity, preparing for health disaster plans is an urgent issue for health sectors to develop an operational planning document for handling disasters.
Conclusion: Academic roles in developing health disaster management extend beyond the curriculum to include policies focused on training and mentoring. In addition, the consultants in the Division of Disaster Health Management, CHPM FK-KMK UGM, are committed to supporting health sectors in developing practical, evidence-based policy and management solutions for health disaster planning.

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Development of an In-Hospital Patient Bank for the Emergo Train Simulation Platform to Enhance Hospital Capacity

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Introduction: The Emergo Train System (ETS) is a critical simulation tool widely used to train healthcare professionals for emergency and disaster scenarios. However, traditional ETS applications focus on prehospital mass-casualty events and surge capacity in the acute chain, excluding in-hospital ward dynamics. Here, a specialized patient bank tailored to in-hospital patients enables hospitals to simulate daily operational challenges such as patient surge and, in case of hospital emergency training, evacuation processes.
Methods: The patient bank was developed using a structured workflow, which involved defining patient profiles and integrating diverse healthcare needs that reflect the complexities of in-hospital scenarios. The patients in this bank span various medical needs encountered in daily hospital operations, facilitating realistic training in patient management and interdepartmental coordination. The patient bank was pilot tested in exercises at three hospitals to assess its applicability and effectiveness in simulating daily hospital activities and surge capacity. Data were collected through exercise instructor feedback as well as observational analysis to refine patient scenarios and enhance realism.
Results: The exercises demonstrated the versatility of the ETS patient bank in simulating real-time hospital operations. Instructors reported a dynamic training experience, highlighting that the bank could be used to improve preparedness for managing in-hospital surge capacity and evacuation processes. Feedback indicated that the simulated scenarios closely resembled daily hospital workflows, enhancing the perceived relevance and practical application of the training.
Conclusion: This specialized ETS patient bank addresses a significant gap in hospital preparedness training, providing an innovative tool to simulate routine in-hospital activities and crisis responses. This in-hospital patient bank represents a valuable expansion of ETS, broadening its utility beyond disaster scenarios to hospital preparedness. The successful implementation across multiple hospitals exercises suggests its potential for wider adoption, providing an impactful resource for training healthcare personnel in both routine and crisis settings.

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Pediatricians' Perceptions and Preferences for Disaster Education: A Survey Study

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Introduction: The increasing frequency of global disasters highlights the need for timely, effective disaster education for healthcare providers. This study assesses pediatric providers' experiences with disasters, perceptions of potential threats, and educational preferences to improve preparedness.
Methods: A survey was conducted among pediatricians affiliated with the American Academy of Pediatrics (AAP) Chapters in Washington, D.C., Maryland, and Virginia from February to April 2024. Data on personal disaster experiences, perceived

threats, and preferred educational resources were collected. Descriptive statistics and odds ratios (OR) with 95% confidence intervals were used for analysis.
Results: Of the 104 respondents, most were attending physicians (88%) working in healthcare or academic settings (73%), identifying as Millennials or Generation X (91%), with a median practice duration of 8 years. Commonly experienced disasters included winter storms, hurricanes, floods, power outages, and infectious disease outbreaks. Mass shootings and cyberattacks were perceived as the biggest threats despite limited direct experience. Preferred resources were electronic newsletters and professional associations, while during disasters, social media and real-time electronic sources were favored.
Conclusion: Pediatricians' awareness of potential disaster threats exceeded their direct experiences, highlighting key areas for targeted educational interventions. The preference for digital and social media resources during disasters reflects a broader shift towards more accessible, timely education formats that are applicable across healthcare professions. While this study focused on pediatricians, the findings can be generalized to healthcare providers more broadly, emphasizing the importance of disaster education that leverages digital and social media channels to ensure clear, actionable information. This approach is crucial for public health and healthcare organizations to effectively inform healthcare providers during ongoing disaster situations.

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Adapting First Responder Efforts During Heightened Alert and Wartime

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Introduction: During heightened alert and wartime, first responder responsibilities expand significantly. Since ambulance services are a limited resource, rescue services take on additional roles, such as transporting patients and injured individuals from structural collapse. A workshop was conducted to produce activity suggestions for adapting the rescue services towards handling the additional tasks during wartime and heightened alert.
Methods: The research team's task was to design and test an evaluation model that allowed for the systematic development of action proposals maturing from evaluations to ensure effective use of resources.
Results: A structured workshop was conducted, engaging numerous stakeholders, to test the model for systematic generation of activity suggestions. The methodology shares characteristics with Engeström's activity theory, specifically the process of expansive learning and the change laboratory model, but was adapted to fit the time and resource constraints typical of disaster response planning. Our approach retained core aspects of activity theory while enhancing efficiency and scalability for broader participation. The compressed, interactive format enabled robust input from a diverse group of responders and administrators, supporting rapid iteration and feedback.
Conclusion: This model demonstrates a viable, systematic approach to evaluating and enhancing first responder efforts under challenging conditions. By adapting activity theory principles to a condensed timeframe, we created an accessible tool that can streamline planning and preparedness for expanded emergency roles. This evaluation model holds promise for broader applications in civil defense and emergency management, particularly where quick yet thorough participatory assessments are required.

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Incorporating the Pediatric Trauma Module Into Singapore's Disaster Medical Responders' Course

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Introduction: In a mass casualty incident, adult medicine-trained emergency physicians and nurses may need to treat pediatric casualties, as part of Field Medical Teams (FMTs) deployed to pre-hospital First Aid Posts. These healthcare professionals are often unaccustomed to managing pediatric patients, who present relatively infrequently to adult general hospital emergency departments in Singapore. A pediatric pre-hospital trauma module was developed to address this gap in knowledge and skills, potentially improving the survival of pediatric casualties in a disaster scenario.
Methods: The pediatric module was embedded in the National Disaster Medical Responders' Course (DMRC) to ensure all emergency medicine medical and nursing staff would progressively benefit from this training. The learning objectives included: 1) effective clinical management of pediatric trauma in a pre-hospital environment with limited medical resources; 2) efficient management of team dynamics in organizing the FMT's response to pediatric trauma management in a pre-hospital environment; and 3) accurate prioritization during pediatric trauma triaging and evacuation to hospital in a pediatric-predominant mass casualty incident. The curriculum included the following aspects: triage; initial assessment and primary survey; airway, breathing, circulation, and disability considerations focusing on differences between adult and pediatric patients; and team dynamics. Course content was delivered via pre-recorded lectures (given the ongoing COVID-19 pandemic) and hands-on skill stations in small groups.
Results: From April 2022-August 2024, 50 courses with 1144 participants from public healthcare institutions were conducted.

Of the participants, 246/1144 (21.5%) were doctors, 787/1144 (68.8%) were nurses, 65/1144 (5.7%) were allied health, and 46/1144 (4.0%) were administrative staff.
Conclusion: Medical responders in a mass casualty incident need to be prepared for managing pediatric casualties, which are infrequently encountered in daily clinical practice. This module is an important component of Singapore's disaster medical curriculum and will contribute to disaster preparedness for the vulnerable pediatric population.

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Barriers and Facilitators Toward Disaster Knowledge, Skills, and Preparedness among Emergency Medical Services in Saudi Arabia.

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Introduction: Disasters pose significant challenges globally, affecting millions of people annually. In Saudi Arabia, floods constitute a prevalent natural disaster, underscoring the necessity for effective disaster preparedness among Emergency Medical Services (EMS) workers. Despite their critical role in disaster response, research on disaster preparedness among EMS workers in Saudi Arabia is limited.
Methods: The study aimed to explore disaster preparedness among EMS workers in Saudi Arabia. This study applied an explanatory sequential mixed-methods design to explore disaster preparedness among EMS workers in Saudi Arabia, focusing on the qualitative phase. Semi-structured interviews were conducted with fifteen EMS workers from National Guard Health Affairs (NGHA) and Ministry of Health (MOH) facilities in Riyadh, Dammam, and Jeddah. Thematic analysis was conducted following Braun and Clarke's six-step process, ensuring data rigor through Schwandt et al.'s criteria for trustworthiness.
Results: The demographic characteristics of participants revealed a predominantly young, male workforce with varying levels of experience and educational backgrounds. Thematic analysis identified three key themes: (1) Newly/developed profession, highlighting the challenges faced by young EMS workers in acquiring disaster preparedness; (2) Access to opportunities and workplace resources (government versus military), indicating discrepancies in disaster preparedness support between government and military hospitals; and (3) Workplace policies and procedures, highlighting the need for clearer disaster policies, training opportunities, and role clarity among EMS workers.
Conclusion: The study underscores the importance of addressing the unique challenges EMS workers face in Saudi Arabia to enhance disaster preparedness. Recommendations include targeted support for young EMS professionals, standardization of disaster training across healthcare facilities, and improved communication of disaster policies and procedures. These findings have implications for policy and practice in disaster management and EMS training in Saudi Arabia.

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Disaster Medicine Core Competencies for Emergency Medical Technician Paramedics: A Comparative Analysis with Emergency Physicians

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Introduction: In Taiwan, emergency medical technician paramedics (EMTPs) have received disaster management training similar to emergency medicine (EM) residents for the past two decades. However, differences in their roles suggest that their disaster medicine core competencies (DMCCs) may differ. This study aims to identify the DMCCs for EMTPs and compare them with those of EM residents to optimize their performance in disasters.
Methods: A modified Delphi method was conducted over three rounds. A 41-item questionnaire, based on the National Standardized All-Hazard Disaster Core Competencies Task Force, was distributed to 21 experts, including 14 senior EMS medical directors and 7 senior EMTPs. Experts rated and ranked the DMCCs, and a consensus was reached after three rounds. A comparative analysis was conducted to highlight the prioritized DMCCs for EMTPs versus EM residents.
Results: Twenty DMCCs with high consensus were identified. EMTPs and EM residents shared 12 DMCCs, including mass casualty incidents, mental health, prehospital disaster management, triage, personal protective equipment, identification, notification, activation and information collection, incident management system, decontamination, basic concepts and nomenclature of disaster medicine, disaster exercises, medical response in bioterrorism and biological emergencies, and medical response of chemical emergencies. EMTPs also prioritized 8 additional DMCCs, such as fire and burn mass casualty incidents, safety management, casualty transfer, surge capacity and surge capability, blast injuries, building collapse and medical response, casualty identification and tracking, and tactical medicine, which were not emphasized in EM residency training.
Conclusion: The identified DMCCs lay the groundwork for a tailored disaster management curriculum for EMTPs in Taiwan.

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Health Crisis Management Education at Okayama University Medical School

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Summary: In 2022, Japan revised its Model Core Curriculum for Medical Education and introduced a new component on "Health Crisis Management." Medical students are required to understand the following aspects of Health Crisis Management: the concept, types, and responses to health crises; risk communication; legal framework; disaster health management, including the role of the Disaster Medical Assistance Team. In response, Okayama University restructured its health crisis management curriculum and launched a new class in 2023. This class, which targets fourth-year students, involves group discussions on optimal medical resource allocation strategies during large-scale natural disasters. Each group is tasked with presenting their proposed allocation strategy and emphasizing its strengths and limitations, followed by a Q&A session where they explain the background and details of their strategy. The experiences of the class revealed that medical students consider factors beyond the severity and urgency of medical conditions when allocating resources, such as whether the patient belongs to the "guild" of medical professionals. Some interesting convictions expressed by medical students will also be included in the congress presentation, such as the idea that medical professionals should receive priority over the general public for treatment, while local government legislators and local worthies should not. The medical students who are expected to become practicing physicians across Japan in the coming years are learning about health crisis management from various perspectives under the new curriculum. This novel course is designed to help students understand that preparedness and accountability are crucial in Health Crisis Management and that there is no absolute right answer to the question of optimal medical resource distribution during a disaster because of the various values, cultures, and philosophies involved.

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Disaster Medical Education in Singapore: An Educational Experience for the Student and Layman, Through and Beyond a Pandemic

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Introduction: Emerging research has shown the vital role the public can play in a disaster. Disasters render communities with more casualties than resources, with response time of first responders increasing from minutes to hours. While there are multiple existing public education courses in Singapore on first aid skills and basic life support, along with public interest in serving as first responders, no available course equips the layperson with the skills and knowledge required for disaster response.

Methods: To address this gap, a pilot education program was created. During the COVID-19 pandemic, the pilot program targeting the layperson was held virtually. Sessions were delivered first didactically, then in breakout rooms to facilitate discussion. Post-pandemic, a pilot simulation program was held for medical students without prior disaster education. Skills on patient triage, first aid, and casualty transport were imparted and subsequently practiced via simulation.

Participants submitted pre- and post-course questionnaires.

Results: 24 of 35 (68.6%) participants for the public program provided feedback. 50% of participants initially felt their skills were 'poor', which decreased to 0% after the course. 90% had gained new skills. 91% indicated that the learning methodology was appropriate. 18 of 20 (90%) students provided feedback on the simulation session. Confidence levels in assisting in disasters increased from 22.2% to 100%. 94.4% of participants felt that the simulation facilitated their learning and improved their interest in disaster medicine. All participants would recommend the courses to others.

Conclusion: The inherent nature of a disaster requires a time-sensitive response from the layman, who has the key advantage of proximity, to provide basic yet lifesaving interventions. This pilot education program, adapted to the limitations of the pandemic, shows promise in improving knowledge and readiness for disaster response. Future steps include public simulations, involving medical students as facilitators, and conducting regular cycles to integrate this knowledge to the masses.

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Enhancing Interprofessional Collaborative Practices Through Trauma Simulation Training at Changi General Hospital (Singapore)

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Introduction: Healthcare simulation has evolved to support interprofessional education (IPE) and interprofessional collaborative practice (IPCP) to enhance teamwork and communication. In 2010, the World Health Organization published the Framework for Action on IPE, and the Canadian Interprofessional Health Collaborative established domains for IPE competencies. As part of a comprehensive response to improve emergency preparedness for mass casualty events, Changi General Hospital (CGH) developed a trauma simulation training program built upon these frameworks. The

training program has been continually revamped, most significantly in 2017 with the introduction of a new surge protocol for managing smaller-scale emergencies involving fewer than 20 critical casualties.

Methods: The IPE-based trauma simulation training aimed to build collaborative competencies across healthcare teams comprising medical and nursing staff from Emergency Medicine, Surgery, Orthopedic Surgery, and Anesthesiology specialties. The Interprofessional Collaborative Competency Attainment Survey (ICCAS, Revised 2018) was used to evaluate the effectiveness of the training. ICCAS is a validated tool that measures improvements across the key domains via a retrospective self-reported pre- and post-course survey design.

Results: The ICCAS results revealed substantial improvements in all of the domains of interprofessional collaboration:

- **Communication:** A 25.1% increase in clarity and role-based communication across healthcare teams.
- Collaboration and Team Functioning: A 26.6% improvement in joint decision-making during triage and resource allocation, promoting smoother teamwork and better patient outcomes.
- Roles and Responsibilities: A 24.5% enhancement in participants' understanding of their roles and those of their colleagues, leading to more efficient teamwork.
- Conflict Resolution and Patient-Centered Care: A 24.2% improvement in managing conflicts under stress, optimizing team dynamics, and enhancing patient care.

Conclusion: The results of the ICCAS have affirmed the effectiveness of integrating IPE frameworks into trauma simulation training. Continued training and feedback will further sustain these gains and strengthen interprofessional collaborative practice in CGH's emergency preparedness.

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Strengthen Shikoku Interregional Cooperation! Report on Shikoku Region Disaster Preparedness Coordination Workshop

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Summary: This is a report on the first joint workshop on disasters held by dietitian associations in the four prefectures in Shikoku. The training was conducted online on July 28, 2024; each of the four prefectures planned the content of the training. Kochi Prefecture presented its support for the Noto Peninsula earthquake, Ehime Prefecture reported on its activities as a rehabilitation organization, Tokushima Prefecture reported on its support for the torrential rain disaster and training, and Ehime Prefecture presented its experience of both receiving aid and providing support during the torrential rain disaster. Monthly online meetings were held by the president of each prefectural dietetic association and the director of disaster preparedness to discuss training content.

There were 113 applicants and 82 viewers. In addition to Shikoku, many participants came from Chiba, Tokyo, Okayama, and Hyogo prefectures. During the Q&A session, there was a lively exchange on the actual support and the receiving of aid. Individual prefectures cannot cope with a Nankai Trough earthquake, and it is desirable to strengthen cooperation in Shikoku. This workshop was a step in this direction.

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Current Understanding of Emergency Medicine and Knowledge, Practice, and Attitude Toward Disaster Preparedness and Management Among Healthcare Workers in Nepal

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Introduction: Disasters are serious disruptions to a community's functioning that exceed its capacity to cope using its resources. Natural, man-made, technological hazards, and other factors may cause disasters and influence a community's exposure and vulnerability.

The objective of the study was to assess the knowledge, practice, and attitude of healthcare workers in Nepal regarding disaster preparedness and management for emergencies.

Methods: A retrospective study was conducted among healthcare workers in Nepal registered for the 1st World Academic Council of Emergency Medicine- Table-top Exercise and Communication in Disaster Medicine conference as participants or faculty. Information was collected using total enumeration sampling and a questionnaire developed from a literature review, and the questionnaire was adapted from the Emergency Preparedness Information Questionnaire (EPIQ). Percentages, means, and medians were calculated for socio-demographic data, knowledge, practices, and attitudes toward emergency preparedness. A chi-square test assessed associations between socio demographic characteristics, emergency procedures, and familiarity scores on the preparedness questionnaire.

Results: A total of 118 participants took part in the study, most with over six months of emergency department experience. There was a significant association between work experience and emergency procedure status ($\chi 2 = 6.982$, p=0.008), and between education level and familiarity with disaster management ($\chi 2 = 5.507$, p=0.019). However, there was a low correlation (r=0.140, p=0.129) between emergency procedure status and disaster management familiarity.

Conclusion: Emergency preparedness is crucial for life-saving in disasters. The availability of emergency services and skills related to emergency preparedness and disaster management is crucial for saving lives in emergency conditions. The hospital should provide emergency preparedness and disaster management training to all healthcare workers. In addition, the hospital authority should perform disaster exercises/tabletop simulation exercises, or drills periodically.

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Crisis Management Training Program (CMTP) course by the Japan DMAT Secretariat.

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Summary: Japan is a disaster-prone country and in need of personnel with all-hazard type crisis response capabilities that encompass natural disasters, infectious diseases, and CBRNE. However, human resource is limited in Japan, which has a public health perspective and the ability to respond to health crisis management cases such as disasters. The purpose of this program is to train experts who can contribute to the coordination and improvement of the medical system in case of a disaster.

The Japan DMAT secretariat trains and operates the national EMT, Japan DMAT, and has launched a 2- year program to train crisis management specialists as a CMTP course since 2024. This program provides opportunities to gain experience in the planning and operation of training and practical exercises, as well as administrative work and research in the case of a disaster.

First-year trainees are: •Certified as DMAT members and are learning the principles of disaster and health crisis management. •Participated in a disaster exercise organized by the government and local authorities to gain experience in disaster response. •Attended training organized by the infection crisis management authorities. •Learned how to analyze and evaluate data by practicing responses to actual disasters and other health crisis management incidents. CMTP course content is expected to be brushed up according to future results.

The First CMTP course will conclude in March 2026. The Secretariat will continue to develop human resources for disaster management in the CMTP course.

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The Significance and Role of the Japan Disaster Medical Assistance Student (DMAS)

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Summary: The Disaster Medical Assistance Student (DMAS) is the student division of the Japan Association for Disaster Medicine, with eight branches nationwide. Since its inception ten years ago, DMAS has been actively engaged in activities centered around disaster medicine. Regular study sessions are held both in person and online, focusing not only on theoretical aspects but also on practical, hands-on training.

Recently, a survey was conducted among DMAS student members, requesting them to share their insights and experiences gained through DMAS activities. The survey results indicate that students acquire crucial knowledge and skills related to disaster response, which they believe would be difficult to learn in a traditional classroom setting. The hands-on training sessions provide students with the opportunity to experience the realities of disaster medicine, enhancing their ability to respond effectively and adapt under pressure. These opportunity sessions also emphasize the importance of collaboration and coordinated response systems, helping students understand the value of teamwork in high-stress emergencies.

Many students expressed that their involvement in DMAS has not only enriched their knowledge but also deepened their commitment to disaster medicine. Through these activities, they gain a practical understanding of the role of healthcare professionals during disasters. They also prepared them to become valuable members of the medical community. As they look to the future, it is anticipated that DMAS members will continue to grow as disaster medicine practitioners, with the skills and mindset required to support and strengthen Japan's disaster response framework. DMAS aims to cultivate these students into future health care professionals who will uphold and advance disaster medicine in Japan, ultimately benefiting communities in times of need.

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Seizing Opportunities Amidst Crisis: The Impact of Emergency Conditions on Nursing Education

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Introduction: At the onset of the COVID-19 pandemic, the Israeli Ministry of Health granted temporary authorization for nursing graduates who had completed their studies but had not yet taken the Governmental Licensing Exam in Nursing (GLEIN) to work in hospital wards with expanded responsibilities typically designated for registered nurses. This study aimed to evaluate whether clinical work experience in hospital settings during the COVID-19 pandemic positively impacted nursing students' scores on the GLEIN.
Methods: A retrospective analysis was conducted at a Nursing School in Israel. The participants comprised nursing students enrolled in the Career Retraining to Nursing Program for Graduates of Other Academic Professions, all registered to take the June 2020 GLEIN.
Results: The analysis included sixty-eight students: 23 who were recruited to work as nurses at the pandemic's outset and 45 who did not engage in work during this period. No statistically significant differences were found in demographic

characteristics or average grades obtained in the preceding academic year between the two groups. However, the group with clinical work experience demonstrated statistically significantly higher average final grades and GLEIN scores compared to their counterparts without work experience. Furthermore, work experience was identified as a predictor of higher scores on the GLEIN.

Conclusion: Clinical work experience plays a crucial role in achieving elevated scores on the GLEIN, extending beyond the impact of academic performance alone. Such experience equips students for practical roles in the field and is anticipated to align the expectations of novice nurses, thereby fostering nurse retention post-graduation and sustaining the essential nursing workforce.

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A Systematic Review of the Efficacy of Full-Scale Simulation Exercises in Enhancing Hospital Disaster Preparedness

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Introduction: A full-scale simulation exercise is a comprehensive drill designed to replicate a real-world emergency scenario, thereby identifying the strengths and weaknesses in current practices. The overarching goal is to enhance healthcare system resilience through improved protocols, as highlighted in this systematic review tailored for researchers. The study aims specifically to assess the impact of full-scale simulations on enhancing hospital disaster plans.

Methods: Following PRISMA guidelines, this systematic review investigates the impact of full-scale simulation exercises on hospital disaster preparedness. The focus was on hospital staff involved in disaster and emergency preparedness training. The primary intervention was the execution of full-scale simulation exercises, and our research included various study designs, including randomized controlled trials and observational study designs. A comprehensive electronic database search was conducted, spanning PubMed, Scopus, Web of Science, and the Cochrane Central Register of Controlled Trials, from inception until October 9, 2023. The risk of bias was assessed using NIH tools.

Results: The literature search yielded 2,398 results, with 28 publications finally included in the systematic review. Summarizing a broad range of disaster preparedness simulation exercises with a specific focus on full-scale simulation (FSS), the studies consistently demonstrated a positive impact on participants' skills, as well as identifying safety issues in hospital settings. Moreover, they revealed that simulations effectively addressed crucial areas for improvement in disaster response, including communication breakdowns, equipment deficiencies, and flaws in emergency plans. The studies utilised a multidimensional approach to evaluation metrics, encompassing non-technical skills, communication, teamwork, decision-making, and operational readiness. The exercises varied in duration from 30 minutes to multi-day simulations, covering a diverse range of disaster scenarios, such as mass casualties, viral epidemics, large aviation accidents, and terrorist attacks.

Conclusion: There is a need for further programs that align simulation exercises with community resources for better preparedness in the face of public health disasters.

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Lost in Translation: Reversing Roles and Building Empathy to Address Linguistic Barriers in Patient Care

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Introduction: Linguistic communication barriers create challenges in delivering effective healthcare, particularly in emergent or disaster conditions, where miscommunication has dire consequences. Design thinking, a human-centered problem-solving technique, was utilized to identify innovative solutions to improve provider understanding of the effects of those barriers on patient care. Empathy interviews were conducted with patients, and providers evaluated contrasts in patient care between language-concordant and discordant encounters, directing the development and implementation of a preferred-language role-reversal simulation exercise.

Methods: Emergency Medicine (EM) resident physicians completed a survey evaluating experience and attitudes in caring for non-English speaking patients. In a structured simulation encounter, English-speaking EM residents placed in a patient role were treated by embedded participant physicians speaking non-English languages. Following the simulation, participants completed a post-survey and structured debrief. Responses were analyzed for differences and themes.

Results: In 20 matched responses, residents were overall confident in their ability to diagnose and treat patients and reported lower confidence in their ability to treat non-English speaking patients. Following the simulation, overall confidence decreased, and disparity increased. Participants universally rated communication as challenging, and confidence was lower in understanding concerns and the overall quality of care. Structured debrief sessions were useful in identifying common themes, including perspectives on patient encounters and technology available.

Conclusion: This novel exercise was an effective tool to provide education and experience on the care of language discordant patients. Results and reflections exposed a lack of confidence in the current means available and the need for better technology and resources to help alleviate barriers when traditional avenues for communication fail. Simulation is an easily modifiable modality that may be useful to explore the impact of language and other barriers on healthcare and patient experience. This study highlights the need for further research and development to address the quality of patient care when language barriers are present.

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Injury of Homemade Speargun Accidents in River Valley Villagers: A Case Series

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Summary: Penetrating injuries from homemade spearguns are common, serious injuries, especially in river basin areas or after flooding. Harpoon injuries are unique and affect surgical treatment planning. This study focuses on managing speargun injury to the torso from pre-hospital to definitive repair.

This case-series study presented five patients injured by a homemade speargun to the torso and attended to the trauma level one center, describing management in the context of the Khon Kaen University experience.

All patients were injured by the fixed-type barbed metal harpoon. Three patients were shot in the chest, and two were shot in the abdomen. All patients were hemodynamically stable. Since each harpoon has a fixed-type barb, it cannot be pulled out retrogradely, so they must be immobilized from a pre-hospital setting, and all patients must undergo surgery. The standard surgical exposure is used to remove the harpoon in an antegrade direction to prevent further tissue injury.

Speargun injuries are challenging and can occur after flooding when there are few facilities available. The harpoon needs to be immobilized from prehospital and surgically removed. To facilitate the operation or investigation, it is sometimes necessary to cut the protruding part of the harpoon using a large bolt clipper with at least two adjustable wrenches to hold the harpoon in place. The recommendation is that the patient should be positioned in the supine position for effective standard surgical management. Since this type of injury can occur after a flooding disaster, it is important to prepare for it.

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Educational Effects of Disaster Volunteer Activities and Bathing Assistance on Paramedic Students

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Summary: Background: The Noto Peninsula Earthquake in 2024 and heavy September rains caused extensive damage, highlighting the essential role of volunteer support amid limited resources. For students aiming to become paramedics, participating in disaster-affected areas provides a valuable chance to learn practical disaster medicine and establish fundamental healthcare skills. Objective: This study evaluates the educational impact of disaster volunteer activities and bathing assistance on students. Methods: A survey of 29 students was conducted using a five-point Likert scale, analyzing correlations between interest and understanding of disaster medicine, self-efficacy, learning motivation, teamwork skills, mental stress, and communication with disaster survivors. Results: A strong correlation emerged between interest in disaster medicine and knowledge of disaster conditions ($r=0.816$, $p<0.01$). Self-efficacy and accomplishment showed a significant link between accomplishment and self growth ($r=0.392$, $p<0.05$), as well as between self-growth and perceived contribution to activities ($r=0.458$, $p<0.05$). Learning motivation showed a positive correlation with cooperative skills ($r=0.370$, $p<0.05$). Teamwork correlated with supply transport and debris removal ($r=0.523$, $p<0.01$), and students who recognized the importance of volunteer work exhibited higher task efficiency ($r=0.413$, $p<0.05$). Discussion: These activities enabled students to better understand disaster medical systems and realities, including resource challenges. Bathing assistance for the elderly helped students develop flexible communication by recognizing and addressing their needs. Working with local residents and disaster welfare teams in debris removal emphasized teamwork and leadership, enhancing their learning motivation. Students also reported feelings of accomplishment and self growth through community support. Conclusion: Disaster volunteer activities deepen students' disaster medicine knowledge and compassion, fostering growth as future paramedics through community support experiences.

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Virtual Reality vs. Traditional Training: A Study on Knowledge Enhancement And Motivation in Paramedic Disaster Triage Education

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Introduction: Disaster triage is an essential competency for paramedics, demanding quick and accurate decision-making in high-pressure environments. Traditional training methods, such as lectures and tabletop exercises (TTx), may not fully replicate the intensity required to build these skills. Virtual reality (VR) presents a novel solution, offering realistic and interactive simulations within a controlled environment.

Methods: A randomized study was conducted with paramedic students (n=83) at the Faculty of Medicine, Ramathibodi Hospital, Mahidol University, divided into traditional (lecture + TTx, n=41) and VR-based (lecture + VR-SSST, n=42) training groups. Both groups received identical lectures, followed by their respective practice methods. Knowledge was assessed

through pre- and post-tests covering memory, comprehension, application, and analysis domains. Motivation was measured using the ARCS model (Attention, Relevance, Confidence, Satisfaction).
Results: Both groups showed significant post-test knowledge improvement. The VR group outperformed in all ARCS dimensions: attention (4.78 vs. 4.17, $p<0.001$), relevance (4.79 vs. 4.37, $p<0.001$), confidence (4.74 vs. 4.24, $p<0.001$), and satisfaction (4.71 vs. 4.34, $p<0.001$).
Conclusion: The findings indicate that VR-based disaster triage training enhances motivation more effectively than traditional methods, while both approaches are effective for knowledge acquisition in paramedic students.

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A Curriculum for Medical Students' Contribution Developed by Analyzing a University Hospital Disaster Response Manuals

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Introduction: Human resource shortage frequently arises in hospital disaster response. Medical students may fill the gap with additional education on disaster response operational capabilities, having their primary medical knowledge and understanding of operations in hospitals through clinical clerkships. To make them join in the operation, a curriculum based on the hospital disaster response manual is needed.
Methods: The tasks in a university hospital's disaster management manual were extracted and categorized to determine whether they should be included in the curriculum. Then, the necessary tasks were broken down into component skills to be the targets for medical students to acquire in a designed curriculum. The developed curriculum is piloted on volunteer medical students, and they are proposed to participate in the hospital disaster drill.
Results: The four categories were defined to determine the placement of the extracted tasks based on medical students' capabilities: a) immediately capable, b) capable with basic training, c) capable with advanced training, and d) incapable. The curriculum should include tasks in b) and c); the latter requires additional education. Of the 451 tasks identified, 87 (19%) fell into category a), 182 (40%) into b), 40 (9%) into c), and 142 (31%) into d). The component skills from b) and c) included communication equipment operation, information gathering, and documentation. Consequently, the curriculum focused on information handling and communication procedures, and primary disaster medical skills were added. The preliminary implementation of five sessions in the curriculum made 17 volunteer medical students more interested in the field. Some participated in the hospital disaster response drills, and the hospital staff recognized their capabilities.
Conclusion: A curriculum for medical students to participate in hospital disaster response activities was developed. It was partly piloted for medical students, and further evaluations of its effectiveness were needed.

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Impact of the COVID-19 Pandemic on Emergency Medical Services: A Three-Year Analysis

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Introduction: The COVID-19 pandemic disrupted emergency healthcare worldwide, heavily impacting Japan's emergency services from early 2020. Reflecting on its effects is essential for future pandemic preparedness.
Methods: This study analyzed data from the Aichi Medical Association's annual survey of emergency patients at 26 tertiary emergency hospitals in Aichi Prefecture, Japan. Over the three pandemic years (2020-2022), we examined trends in ambulance transports, hospitalization rates, and severe cases by age group: pediatric (0-14), non-elderly (15- 64), early elderly (65-74), and late elderly (75+).
Results: Across the three years, age distribution remained constant: pediatric 9%, non-elderly 30%, early elderly 15%, and late elderly 46%. In 2020, ambulance transports dropped sharply (2019: 198,607 cases; 2020: 173,329), particularly in pediatric and non-elderly groups, while hospitalization rates rose (40.2%→44.0%). Surprisingly, severe cases declined (63,382→52,782). In 2021, ambulance transports for pediatric and late elderly patients began increasing, with hospitalization rates continuing to rise (44.5%) and moderate (90,444 cases) and severe cases (62,732) increasing in all age groups. By 2022, ambulance transports had returned to pre-pandemic levels (197,539), but children and non-elderly mild cases increased markedly, and hospitalization rates declined slightly (42.0%). The number of severe cases (72,031) also increased.
Conclusion: In 2020, the number of severe cases as well as mild cases likely decreased due to the restricted outings due to fears of infection. In 2021, virulent variants (Alpha, Delta) contributed to more severe cases. By 2022, increased transmissibility, decreased virulence (Omicron), vaccine distribution, and "pandemic fatigue" contributed to a surge in mild cases. Additionally, while restrictions on movement out and the spread of infection prevention measures led to a decrease in severe cases and non-coronavirus epidemic infections, stress and weakened immunity may have contributed to the increase in moderate and severe cases in subsequent years moderate and severe cases in later years.

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The Mountain Plains Regional Disaster Health Response System and Development of Just-in-Time Training Materials to Address a Disaster Related Knowledge Gap.

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Introduction: The Mountain Plains Regional Disaster Health Response System (MPRDHRS) is a US federally funded program to "leverage, build, or augment the highly specialized clinical capabilities critical to unusual hazards or catastrophic events". MPRDHRS' mission is to "provide leadership, knowledge, expertise, and support in disaster response for patients and citizens in our region." Developing accurate, accessible, and opportune educational materials is

encompassed within MPRDHRS's mission and objectives.
Methods: After performing a gap analysis and curating accessible disaster educational materials, we identified asynchronous, just-in-time (JIT) educational modules (EM) to be high yield for responders in our region. To ensure equal opportunity and appropriate representation, JIT subject matter experts (SME) ought to be recruited by a nomination and strict selection process. A standardized system for module development and recording was implemented.
Results: Thirty-six initial topics were identified as a priority for JIT EM. A diverse and representative group of SMEs was selected, and EMs were recorded. Over two-thirds of modules with their accompanying "one-pager," where key points are summarized, are currently available on our website. Remaining topics outlined for production are continuously recruited for and produced as the project enters its 2nd year. As of 10/17/24, EMs average 54 views, the most popular module garnering 362 views. Modules can be found at: https://mountainplainsrdhrs.org/just-in time/
Conclusion: Despite the availability of relevant materials created and distributed by SME networks, professional societies, and federal partners, discovery by non-disaster response experts, particularly in the wake of a disaster, is unlikely. The JIT EMs fill gaps to enable a safe and coordinated response to disasters and can be updated for emerging threats.

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Advancing Post-Operative Pain Relief: Enhanced Analgesia Through the Transversus Abdominis Plane (TAP) Catheter Technique

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Introduction: TAP catheter analgesia offers a viable alternative to epidural for midline laparotomy. By combining data from three trials, we present a comprehensive analysis, underscoring TAP PCA's effectiveness and safety across diverse clinical contexts, including in emergency.

Methods: Data from three studies were pooled to assess TAP catheter analgesia for post-operative pain relief in patients with midline laparotomy: the STAPLE Trial (quasi-experimental in emergency laparotomies), the WIRELESS Trial (RCT on Ropivacaine via TAP PCA (patient-controlled analgesia) vs. epidural PCA), and the TABLET Trial (bilateral thrice daily bupivacaine injection through TAP catheter vs. continuous epidural infusion).
Results: The STAPLE trial showed on-demand bupivacaine infusion through a TAP catheter in emergency midline laparotomy (58 patients) reduced rescue doses (0.17±0.50 vs. 1.89±0.89), lowered VAS scores at 6 hours (3.07 vs. 4.65) and 24 hours (2.81 vs. 4.40), enabled 13-hour earlier mobilization, and decreased pulmonary complications, when compared to 62 historical controls.

The WIRELESS trial (50 patients randomized in each group) found TAP-PCA non-inferior to epidural PCA in pain relief over 72 hours. Epidural had more complications, with 34% requiring discontinuation versus 10% in TAP. While epidural showed lower VAS at 6 hours (2.7 vs. 3.08), this difference was clinically insignificant. TAP had an earlier flatus passage and shorter median hospital stay (5 vs. 6 days).

The TABLET trial randomized 100 midline laparotomy patients (elective and emergency) and demonstrated equivalent pain relief at rest and during exertion up to 72 hours, with fewer complications in the TAP group (0 vs. 4).
Conclusion: The TAP block provides effective analgesia for emergency and elective laparotomies, promoting early mobilization and fewer complications, especially in cases where epidural anesthesia is unsuitable or unavailable, reducing dependency on anesthesiologists and high-dependency units.

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Using Local Training Basis to Modify TECC to TUECC (Taiwan Under threat Emergency Casualty Care) - A Case Study of National Disaster Medical Team of NCKUH

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Summary: The National Disaster Medical Team of NCKUH, established in 2008, was assigned by the Central Government to provide the medical response during disasters. However, we lack the rescue experience in a high-risk environment, including human-made disasters. So, we tried to develop a training course based on TECC (Tactical Emergency Casualty Care) and hope to provide the trainee in Taiwan with the capability to perform proper rescue and medical care in the under-threat circumstances.

We thoroughly went through the whole TECC class and modified the modules to new ones according to Taiwan's training and regulations. We reorganized the classes to 1. Introduction, 2. Care under threat with high risk (compress, tie, and go), 3. Care under threat with moderate risk (CABDE), 4. Care under threat with low risk (Vital signs

and P.E.), 5. Mass Casualty Triage (CABDE), 6. Summary. Furthermore, we modified the skill stations about 1. Move the casualties 2. Airway, and 3. Stop-the-bleeding to be more friendly to local trainees and encourage them to ask.

The Post-course Satisfaction rate is high. The comparison between pre-test and post-test shows highly educational and helpful for them to learn the concept, "evaluating the risk in the environment first". The trainee showed a high interest in newly-designed modules, esp. the airway management. It demonstrated that this TUECC course significantly increased their self-confidence in responding the injured patients in a disaster in the future.

Following the concept of TECC, reasonable modification of the templates into a new TUECC course seems to be very positive for the local trainee here in Taiwan. More studies to examine the effectiveness and continuous effects compared with TECC are mandatory in the future.

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Prehospital Stroke Assessment through NIHSS Certification of 600 Paramedics

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Introduction: Accurate prehospital stroke identification is critical to ensuring timely treatment and improving patient outcomes. The National Institutes of Health Stroke Scale (NIHSS) is an established tool for assessing stroke severity, but it is not commonly used by paramedics. This project aimed to enhance prehospital stroke care by training paramedics to use NIHSS for early stroke assessment.
Methods: A full-day training program was developed, where paramedics were educated on all aspects of the NIHSS. The training was performed in groups of 10-20 paramedics per session. Training included sessions covering the step by-step use of the NIHSS, followed by practical exercises. After completing the training, each paramedic took an online certification exam on the BlueCloud platform. BlueCloud is an online platform that provides certification and training programs, including NIH Stroke Scale (NIHSS) certification. The certification was for the course 'AA01.1 - NIHSS-English Group A-V5 - 1st Certification.'

Training started in May 2024, when the first groups of paramedics were certified.
Results: A total of 600 paramedics were enrolled in the training program. By the end of 2024, approximately half of the paramedics had been certified, and the remaining paramedics are scheduled to be trained and certified in NIHSS by spring 2025. Three paramedics did not pass certification on the first attempt; two passed on the second, while one abstained from a second attempt.
Conclusion: Certifying paramedics in NIHSS through a structured training and examination program is a feasible approach to improving prehospital stroke assessment. Evaluation is necessary to assess the long-term impact on patient outcomes.

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A Systematic Review on Training Medical Laypeople in Hemorrhage Control

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Introduction: Laypeople acting as immediate responders can save lives in both day-to-day medical emergencies and large-scale disasters, provided that they receive sufficient training in, e.g., first aid. Growing evidence suggests that laypeople can successfully be taught hemorrhage control, yet which training factors that contribute to successful training outcomes are relatively unknown. This systematic review aims to address this gap through a theory-informed analytic approach through the lens of a well-established training effectiveness model used in multiple domains.
Methods: A literature search was conducted within five databases: CINAHL, Embase, PubMed, Scopus, and Web of Science. Studies on medical laypeople who had been formally trained in bleeding control or were part of experimental studies where bleeding control was given to the participant were included. A deductive analysis was conducted where each study's content was analyzed and thematically described according to a predetermined theoretical framework on training effectiveness.
Results: In total, 2962 records were identified after the initial search. 56 studies were included in the review after screening and assessment of the records. Training performance, self-perceived ability, and knowledge acquisition were found to be among the most studied factors. Conversely, trainee expectations, desires, and motivation to attend training, real-world performance, and how patient outcomes are affected by training were among the least studied factors, in addition to rarely being highlighted as important or discussed thoroughly.
Conclusion: The findings suggest that bleeding control training is linked to positive increases in multiple training outcomes, yet the lack of evidence for several important training effectiveness factors could hinder the understanding of how to improve future training programs. These findings could be used by educators and researchers within the field to direct efforts to further bridge the gap between the lack of or existence of scientific evidence and current practices.

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Securing the Airway Amidst Thyroid Swelling: A Case of Acute Stridor Managed with Awake Video Laryngoscopy Technique in Lateral Decubitus Position

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Summary: This case report highlights the management of a 53-year-old female with acute stridor and respiratory distress, attributed to a large thyroid mass. In the emergency department at AIIMS Bhopal, an awake video laryngoscopy technique was used to secure the airway, positioning the patient in the right lateral decubitus after topical nebulization with 4% lidocaine. This approach allowed for safe, effective visualization of glottic structures, avoiding potential complications linked to traditional intubation.
Significant Findings:

- Technique Adaptation: The use of video laryngoscopy, especially in an awake state and lateral positioning, demonstrated an innovative airway management approach for difficult airways due to thyroid enlargement.
- Enhanced Visualization: The video laryngoscope provided clearer glottic visualization, ensuring precise and timely intubation, which is critical in cases of acute respiratory distress.
- **Impact:** This case underscores the value of adaptive strategies in emergency airway management, particularly for patients with complex anatomical challenges. The successful outcome emphasizes that, in settings with limited alternatives, awake video laryngoscopy in lateral decubitus is an effective technique to enhance patient safety.
- Lesson Learned: In managing emergency airways complicated by anatomical abnormalities, particularly in resource-constrained environments, the combination of awake video laryngoscopy and lateral positioning can offer a safer, more controlled approach. This technique may serve as a reliable alternative in situations where standard approaches may fail or carry higher risks.

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Evaluating Prehospital Tranexamic Acid Use and Outcomes in Trauma Across Southeast Michigan: A Retrospective Observational Study

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Introduction: Tranexamic acid (TXA) is an antifibrinolytic drug that has shown efficacy in reducing mortality due to bleeding in trauma patients if administered within three hours of injury. Its use in prehospital settings has been increasingly recognized for its potential to improve outcomes. However, evidence regarding the efficacy of prehospital administration of TXA on trauma outcomes is limited. This study evaluates the use and outcomes of TXA administration in Region 2 South, which encompasses 2.5 million residents.

Methods: An observational retrospective study collected data from trauma patients who received TXA from January 2022 to June 2024. There were 32,284 trauma EMS runs during this period. 24 patients met the inclusion criteria for TXA administration. Data on appropriate use, subsequent doses, complications, and outcomes were analyzed.

Results: Among 24 patients, 6 (25%) had penetrating trauma, 16 (66.7%) had blunt trauma, and 2 had unknown etiologies. TXA administration occurred 7 times in 2022, 13 times in 2023, and 4 times in 2024. All TXA administrations followed protocol. Indications for TXA administration were evidence of blood loss (n=21, 87.5%), hypotension (n=14, 58.3%), and mortality (n=3, 12.5%). Most scene times were less than 15 minutes (n=19, 79.2%). Four patients (16.7%) died, half within 24 hours, with no deaths attributed to thrombotic events or ongoing hemorrhage. No second dose of TXA was given.

Conclusion: Despite the benefits of TXA, its administration remains uncommon. Our findings suggest TXA can be correctly administered per protocol by EMS without serious complications or delay in scene time. Due to the small sample size, we are unable to establish a correlation between TXA administration and mortality benefits. Further studies are warranted to corroborate these findings and provide comparative data to reinforce the evidence supporting the use of TXA in the prehospital setting. Further investigation is needed to determine why a subsequent dose of TXA was not administered.

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Improving Rural Pediatric Readiness with the Use of Virtual Education

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Summary: Many rural emergency nurses are nervous caring for pediatric patients; they care for the critically ill pediatric patient infrequently, especially in smaller rural or frontier communities. Over the last few years, the Child Ready program, with the support of an HRSA grant, has partnered with such communities to offer education and support to improve pediatric outcomes. One specific example is a rural facility in Northern New Mexico, using the EMSC pediatric readiness score as a measure, the Child Ready team worked with the facility, offering both in-person and virtual education and support for physicians and nurses. An initial pediatric readiness score of 64 was assessed, and areas of improvement were identified. The education was specifically targeted towards the facility's needs, utilizing their equipment and virtual mock codes to increase staff confidence in responding to emergencies. In person events facilitated team building with the Child Ready team supporting the relationship between the Child Ready Virtual Pediatric Emergency Department and the rural facility. With this support, the rural facility improved confidence to utilize equipment and respond to pediatric emergencies, policies and procedures were written and implemented, and pediatric-specific equipment was procured. The rural facilities EMSC Pediatric Readiness score jumped from 64 to 94 with the support of

the Child Ready program, improving the rural response to pediatric care.

We will discuss how the use of a virtual platform combined with in-person support can improve pediatric readiness and nursing confidence.

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Advancing Disaster Health Knowledge Management: The Role and Future Vision of ASEAN Journal of Disaster Health Management (AJDHM)

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Introduction: In a disaster-prone region, ASEAN has committed to disaster risk reduction through the ASEAN Leaders' Declaration on Disaster Health Management (ALD-DHM) since 2017. This declaration emphasizes the critical role of Knowledge Management (KM) in DHM and outlines necessary regional and national actions in the adopted Plan of Action (PoA). However, there is a pressing need to transform fragmented experiential knowledge into systematic scientific understanding among healthcare practitioners, policymakers, and academics in DHM. To overcome these challenges, the AJDHM publication program was launched in early 2024, mandated to implement the PoA for disseminating research.

Methods: This study aimed to describe the scope, accessibility, and quality of AJDHM. To achieve this, a comprehensive review was conducted to analyze the editorial and operational dimensions of the journal.

Results: ASEAN established the ASEAN Academic Network on DHM (AANDHM) to implement KM activities, supported by a Steering Committee (SC) from each Member State focused on empowering emerging health practitioners. Its scope primarily aligns with the WHO Health Emergency and Disaster Risk Management framework. The AJDHM's Editorial Board (EB) is composed of designated academics and practitioners related to DHM, recommended by the SC of AANDHM, including academicians from Japan. External reviewers are selected based on the EB's recommendations. The journal's digital platform is maintained by the Faculty of Medicine, Universitas Gadjah Mada, using the Open Journal System, and it has acquired an ISSN. AJDHM's inaugural publication is scheduled for 2025.

Conclusion: In conclusion, AJDHM seeks to bridge scientific, policy, and practical insights within ASEAN contexts, positioning itself as a vital platform for retaining lessons learned and enhancing the capacity of emerging researchers.

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Strengthening Management Aspect of Emergency Medical Teams in Indonesia: An Evaluation of Training Initiatives

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Summary: Indonesia is recognized as the most charitable nation globally, demonstrating a strong commitment to assisting communities, particularly those affected by disasters. The Ministry of Health's Emergency Medical Team (EMT) Health Reserve Personnel (Tenaga Cadangan Kesehatan/TCK) or TCK-EMT dashboard indicates significant engagement since 2023, with 493 registered EMTs, 252 health teams, and 13,999 individual health volunteers. This remarkable growth challenges the government to educate EMTs on effective health service management. In response, the Center for Health Policy and Management (CHPM) at Universitas Gadjah Mada (UGM) provides essential management training for EMTs across the nation.

This report presents data collected from the EMT management training conducted by CHPM UGM, encompassing terms of reference, educational materials, participant demographics, and pre- and post-training assessments that illustrate implementation methods and knowledge outcomes.

In 2024, two batches of hybrid training were held to enhance EMT competencies. The first day involved an online module covering fundamental management principles, including an overview of the EMT Coordination Cell (EMTCC), the organizational structure, deployment preparation, and rapid health assessment techniques. The second day included face-to-face practical training, where the simulation room was organized to replicate an EMTCC post. Participants actively engaged in various EMT activities, including departure preparations, EMT registration, operational planning, daily reporting, EMTCC daily meetings, and compiling health management data. A total of 68 participants (28 men and 40 women), primarily from hospitals, were involved, including 20 doctors, 15 nurses, and 14 pharmacists. A significant increase in knowledge was recorded, with a p-value of 0.0001.

Upon evaluating the training's processes and outcomes, CHPM UGM plans to expand this initiative, targeting a broader participant base to strengthen the TCK EMT program and enhance the managerial skills of EMTs alongside their technical capabilities in health services.

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Evaluating the Impact of the In-Flight Medical Simulation Course on Emergency Preparedness in Saudi Arabia

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Introduction: Any health care provider, regardless of specialty, may be requested to provide care during an in-flight medical emergency. Therefore, there is a demand for a training program to equip all healthcare providers with the required knowledge and skills to be competent in managing in-flight medical emergencies. The in-flight medical emergency simulation course was designed to address this need, providing hands-on, interdisciplinary training that prepares healthcare professionals to respond effectively to medical emergencies in-flight.
Methods: The IMES course is a one-day course conducted in the simulation training facility of Prince Sultan Aviation Academy in Saudi Arabia. It was inter-professional training between health care providers (from different specialties) and airline crew members. The course consisted of a didactic part and four medical simulation scenarios. Healthcare specialties represented among the attendees included physicians, nurses, emergency medical technicians, dentists, respiratory therapists, a clinical pharmacist, and medical students. Pre and post tests were administered to assess knowledge improvement and competency.
Results: Over one year total of 155 participants attended the class and filled the pre- and post-tests. The results revealed that there is a significant difference in the scores of pre-tests (m=12.97, SD=3.52) and the scores of post-tests (m=16.18, SD=3.51); p=.000. There was a considerable raw gain score by an average of 14% as an improvement between the pre-test and the post-test. Those who provided an evaluation of the course showed a high overall evaluation score of around 95%.
Conclusion: Simulation training can create a similar experience of the challenges that can be faced in real inflight medical emergencies. Opportunities for inter-professional training to manage in-flight medical emergencies remain limited; so, the value provided by this course is considered high. This program provides substantial value in preparing interdisciplinary teams to respond collaboratively and effectively to medical crises during flights, addressing a critical gap in existing medical training.

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Prehospital Cricothyroidotomy During Out-of-Hospital Cardiac Arrest in Denmark

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Introduction: Emergency cricothyroidotomy (EC) is a rare but critical intervention in out-of-hospital cardiac arrest (OHCA) when conventional airway management fails. Given the infrequency of EC use in OHCA, systematic knowledge on EC remains limited.
Methods: This study was a registry-based follow-up analysis performed to assess the epidemiology of EC in OHCA cases, with a focus on prevalence, success rate, indications, and survival outcomes. The study identified EC cases within the Danish Cardiac Arrest Registry from 2016 to 2022. Cases were retrieved by systematically searching prehospital medical records in the registry, using a pre-specified list of characteristic keywords derived from previously documented EC cases. Finally, the identified cases were manually validated.
Results: Out of 36,040 OHCA cases between 2016 and 2022, the search identified 36 cases with EC, yielding a prevalence of approximately 1 in 1,000 cases of OHCA. Cases had a median age of 56 years (IQR 50-70) and were predominantly males (72%). The EC success rate was 89%, with 82% of cases involving unsuccessful intubation attempts prior to attempting EC. Key indications for EC included facial trauma (27%), aspiration-induced airway obstruction (27%), edema/swelling (9%), hypothermia-related rigidity (9%), foreign body airway obstruction (9%), and anatomical challenges due to obesity (6%). Most cases (69%) resulted in death before hospital arrival, 23% had ongoing CPR upon arrival, while 9% achieved successful resuscitation.
Conclusion: These findings highlight both the rarity but also the clinical feasibility of EC in prehospital settings. While EC is rarely performed, the high success rate supports its use as a viable last-resort intervention when conventional airway management fails. Additionally, the findings emphasize specific scenarios, such as facial trauma and aspiration-induced airway obstruction, as settings where EC is most likely to be necessary.

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An Assessment of the Impact of High-Quality CPR Training Among Health Care Providers in Rwanda

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Introduction: Sudden cardiac arrest (SCA) is a leading cause of mortality worldwide, with in-hospital survival rates (25.5%) significantly higher than out-of-hospital arrests (10.8%). Effective cardiopulmonary resuscitation (CPR) is crucial for improving survival in hospital settings. Key factors affecting CPR success include compression rate, depth, and minimizing interruptions. Real-time feedback has been shown to enhance CPR performance and patient outcomes. This study aims to evaluate the impact of real-time feedback during CPR training for healthcare providers in Rwanda to improve CPR practices and potentially patient outcomes.
Methods: Health care providers received a one-hour CPR simulation course. The course featured hands-on practice with Laerdal manikins equipped with real-time feedback technology. Before and after the course, participants completed a multiple-

choice assessment based on the AHA Basic Life Support (BLS) exam. Data on chest compression quality were collected using the Laerdal app and CPR feedback system.
Results: Seventy-two healthcare providers participated in the study. Post-training knowledge scores increased from 52% to 82% ($p < 0.001$), and confidence levels improved from 2.92 to 3.68 ($p < 0.001$). These are preliminary results from an ongoing study; more data are being collected and will be analyzed and incorporated as a series.
Conclusion: The training program significantly improved healthcare providers' knowledge and confidence. While individual CPR metrics did not significantly change, overall CPR quality improved. Follow-up sessions are recommended to assess long-term retention and skill decay.

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Disaster-Town: Assessing the Efficacy of a Virtual Platform in Disaster Medicine Training for Medical Students

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Introduction: Disaster Medicine training can be resource-intensive and difficult to reproduce on a large scale. This study explored the use of an online open-source platform, GatherTown, in Disaster Medicine training for medical students. The maps provided were modified to recreate a disaster zone with multiple casualties and hazardous elements. The hypothesis was that this platform would be an effective teaching method and help in knowledge application.
Methods: Medical students from all three medical schools in Singapore were recruited. Those who consented to participate were sent a pre-test questionnaire. Students watched a standardized, prerecorded Introduction to Disaster Medicine video. They then worked together in teams with facilitators to triage and treat 30 casualties in a virtual mass casualty setting. A post-test questionnaire was then sent; this included 10 questions that assessed the students' knowledge of key elements of disaster management. Pre- and post-test results were matched and analyzed.
Results: A total of 43 medical students participated across 2 sessions in 2024. 17 (39.5%) were Year 1 students, 5 (11.6%) Year 2, 8 (18.6%) Year 3, 12 (27.9%) Year 4, and 1 (2.3%) was a Year 5 student. The average pre- and post-test scores were 52.3% and 66.5%, respectively, with an average increase of 14.2% (0.89-1.94 95% Confidence Interval), $p < 0.001$. 29 (67%) students improved, while 3 had lower scores and 11 had the same score. Students felt that the scenario-based virtual game helped facilitate learning of Mass Casualty Incident principles (4.88/5), was interactive and informative (4.91/5), and improved their understanding of disaster triage (4.91/5).
Conclusion: The virtual platform Disaster-Town shows promise and may have future applications in training medical students in Disaster Medicine.

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US Military Medical Student Experiences During a Prolonged Casualty Care Simulation

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Introduction: Prolonged Casualty Care (PCC) refers to delivering medical care in austere environments where evacuation is delayed. In future conflicts, the United States Department of Defense anticipates delays in medical evacuation due to extensive operational areas and challenges associated with operating in semi- and non-permissive environments. This study investigates the impact of a high-fidelity simulation, Operation Gunpowder, designed to teach PCC skills to US military medical students. The simulation emphasizes hands-on experience and leadership within the context of delayed medical evacuation in a limited resource environment.
Methods: A qualitative phenomenological design was employed to explore the experiences of 35 third-year military medical students who participated in Operation Gunpowder. Data were collected through pre- and post-simulation interviews and analyzed for thematic insights, first individually coded and then collectively agreed on emerging themes as a group.
Results: Three main themes emerged: (1) Benefited from Hands-on Learning: Learners highlighted the importance of practical experience in mastering skills essential for PCC, contrasting it with traditional learning methods. (2) Navigated the Operational Environment: Participants discussed how the simulation exposed them to unpredictable, high-stress scenarios, enhancing their ability to improvise and manage patient care under pressure. (3) Developed Leadership Skills and Abilities: Students recognized their growth and potential in leadership roles, emphasizing teamwork and communication as critical for successful operations.
Conclusion: Operation Gunpowder effectively enhanced students' clinical skills and preparedness for real-world military operations. The simulation fostered hands-on learning, resilience in unpredictable operational environments, and the development of leadership abilities. These findings underscore the necessity for simulation-based training in military medical education, particularly in preparing students for the complexities of

PCC in future deployments. Further research will quantify the simulation's impact on skill performance and explore the integration of telemedicine in austere environments to enhance military medical education.

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The Professionalization of Emergency Management: Challenges, Progress, and Pathways Forward

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Introduction: Since FEMA's establishment in 1979, efforts to professionalize emergency management have persisted, with the COVID-19 pandemic highlighting the urgency of this process. This study examines professionals' experiences, awareness, and opinions to advance the field. Using surveys and focus groups, the research explores core components of professionalization, including specialized knowledge, education, ethical standards, and certification. Guided by a definition from the International Encyclopedia of Social and Behavioral Sciences (Smelser & Baltes, 2001), it aims to provide actionable insights and a comprehensive view of the profession. The presentation will share findings and highlight opportunities to shape emergency management's future. Attendees will gain practical strategies for addressing challenges and advancing the field.
Methods: The research team is using the Participatory Action Research (PAR) methodology, which is known to implement interventions effectively. The data collected by the survey will determine topics to be reviewed by focus group teams. Following survey data collection, focus groups will convene to delve deeper into the findings and discuss actionable recommendations. These collaborative discussions aim to foster the formalization of critical efforts by professionals at local, national, and international levels.
Results: Preliminary results confirm assertions from seminal theorists about the need to professionalize the field in various areas. These include discussions on an emergency management (EM) oversight organization in the United States, EM licensure, EM educational programs (including accreditation and scholarships), funding leadership positions in EM departments, and strategic planning.
Conclusion: This study highlights the need to professionalize emergency management by addressing education, licensure, oversight, and strategic planning. Combining survey insights with focus group discussions via Participatory Action Research, the research validates theories and identifies actionable pathways to enhance the field's structure and impact. These findings advance emergency management locally, nationally, and globally, fostering a unified, resilient profession ready to meet the challenges of a complex world.

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Implementation and Evaluation of the WHO Basic Emergency Care Course in Rwanda: A Multi-Phase Study

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Introduction: Basic, affordable training can improve emergency systems to reduce morbidity and mortality among patients with acute emergent conditions. This study evaluates knowledge retention of Rwandan clinicians and their patient management following implementation of the World Health Organization and the International Committee of the Red Cross's Basic Emergency Care (BEC) course. This is the first study to evaluate patient care immediately before and after participation in the BEC course.
Methods: A three-phase prospective, nonrandomized study was conducted at the University Teaching Hospital of Kigali, Rwanda, from 2022-2024, including 41 Urgent Medical Aid Service (SAMU) responders and Nurses (Phase 1), 25 general practitioners (GP, Phase 2), and 34 graduating medical students (Phase 3). Paired t-test compared mean pre- and post-test scores. GPs' patient management for cases involving abnormal vital signs and/or hypoglycemia before and after course participation was assessed using Pearson's Chi-squared test.
Results: There were significant gains in knowledge pre- to post-course (mean ⊠ nurses = +16.3%, GP = +15.2%, medical students = 14.1%; $p < 0.001$), with no significant difference between these groups ($p = 0.70$). In Phase 2, comparing pre versus post course patient management, ($n = 264$ pre, $n = 108$ post), there were non-significant increases for appropriate antibiotic use for sepsis (62.1% vs 70.3%,$p = 0.26$), oxygen administration for hypoxia (97.9% vs 100%, $p = 0.34$), and fluid delivery for shock(83.0% vs 84.1, $p = 0.81$). There was also a non-significant decrease in glucose administration for hypoglycemia (88.2% vs 86.7%, $p = 0.87$).
Conclusion: Across medical providers, the education intervention had a significant and beneficial effect in increasing knowledge overall. There were no significant differences in recorded patient management. Future studies may be targeted towards early career clinicians with limited clinical experience to determine if a more targeted intervention matching the clinical experience of GPs would change patient management.

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Polytrauma to Aeromedical Evacuation: Flexibility when Treating a Critically Ill Patient at a Small Military Treatment Facility

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Summary: Despite often being located near large cities, many Military Treatment Facilities abroad practice day-to-day as small hospitals with limited resources. When a polytrauma patient presented in critical condition to the urgent care of one such Military Treatment Facility, requiring emergent exploratory laparotomy, massive transfusion, and critical care for over 24 hours before medical air evacuation, the flexibility and creativity of providers at all levels were tested. Surgical staff created a makeshift wound vacuum after packing the abdomen, an endoscopy suite was transformed into an intensive care unit room, blood products were acquired from outside resources, and anesthesiology staff flexed into the roles of both intensive care nurses and providers. Checklists based on the Prolonged Field Care Casualty Card were created for hourly care endpoints, and schedules were made for provider-to-provider handoffs to prevent fatigue. This case details the prehospital management, initial emergent care, surgical intervention, damage control resuscitation, and prolonged care of this patient in a low-resourced environment before successful aeromedical evacuation. Lessons learned from this event can be used to assist implementation of a formal trauma protocol, improve medical readiness in the event of a mass casualty, and facilitate navigation of a semi-austere environment during extended care for critically ill patients.

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High Frequency Oscillatory Ventilation in Long Distance Transfer of Neonates in Australia – A Case Series from a Single Centre

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Summary: Located on the northernmost coastline of Australia, Royal Darwin Hospital (RDH) is the first point of referral for more than 60 remote communities, servicing an area > 650 000^2 km^2. Aeromedical transfer of infants for sub-specialist review or an escalation in medical care to quaternary services requires a minimum of four hours of flight time. Since commencing in April 2018, the Northern Territory Neonatal Emergency Transport Service (NETS NT) has transferred more than 30 infants to interstate hospitals.

This case series reviews the transport of four critically unwell infants from RDH to two quaternary hospitals, each more than 3400km from Darwin. All babies were transferred in the setting of respiratory failure requiring High Frequency Oscillatory Ventilation (HFOV) to access locally unavailable therapies, both surgical and medical. Three of the four infants were born very prematurely, <29 weeks gestational age, with weights 968 g- 1317 g at the time of transfer. One infant was born at term but required transfer due to respiratory failure on maximal available therapy for meconium aspiration syndrome. Use of this mode of ventilation in transport has been described, however, few reports relate to HFOV in long-distance transfers of more than 2500km.

The NETS NT experience of >2500km transfer of 4 critically unwell infants receiving HFOV is unique, with lessons learned in this highly specialized environment. This case series will discuss the specific preparations required, including pre-departure stabilization, preparation for and management of in-flight deteriorations, and consideration of specialized equipment given the long flight time on HFOV.

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Laypeople Feel More Confident Performing Basic Life Support with Illustrative Guides

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Introduction: Bystanders' immediate cardiopulmonary resuscitation (CPR) significantly increases survival rates for victims of sudden cardiac arrest. However, laypeople often hesitate to intervene. In Japan, the rate of bystander CPR for witnessed out-of-hospital cardiac arrest was 59.2% in 2022. One major reason for hesitation is that laypeople do not know or cannot recall the proper steps, even when willing to assist. To address this, we created handkerchiefs depicting the steps of basic life support (BLS), including chest compressions and using an AED. This study assessed whether these illustrated handkerchiefs influence non-medical individuals' confidence and willingness to perform BLS.
Methods: A questionnaire survey was conducted on October 20th at Nagoya City University West Medical Center, targeting non-medical attendees of the Reiwa 6th Annual Kita-ward Festival in Nagoya. The survey gathered demographic information (age, prior CPR training) and assessed participants' hesitance and confidence to perform BLS using visual analog scales (VASs) before a hands-on BLS training session. After the session, participants rated their hesitance and confidence in performing BLS with and without the illustrated handkerchief.
Results: Thirty-four laypeople participated in the study. The mean VAS scores for hesitance and confidence before the session were 5.1 and 3.3, respectively. Post-session, the average

hesitance score significantly decreased to 2.1 with the illustrated handkerchief but remained at 5.2 without it. The average confidence score increased significantly to 7.5 with the handkerchief and 4.9 without it.

Conclusion: Illustrative guides showing BLS steps effectively reduced hesitance and increased confidence among laypeople in performing BLS. Portable handkerchiefs depicting BLS steps could encourage more bystanders to provide BLS to out-of-hospital cardiac arrest victims.

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Political Tensions and the Medical Response in the Israeli Health System During the COVID-19 Pandemic

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Introduction: Due to its classification as a medical emergency, the Israeli health system was tasked with spearheading the fight against SARS-COV-2 in Israel. Consequently, politicians were crucial in cultivating public trust, coordinating all facets of the country's healthcare infrastructure, and managing medical emergencies. In times of disaster, the Israeli healthcare system's survival relies heavily on delivering medical services by the four HMOs. This study aims to assess the relevance of political tensions to the healthcare system in Israel.

Methods: While fighting the COVID-19 pandemic (2020-2022), thirteen high-ranking individuals within the Israeli healthcare system who were directly involved in managing and leading the country's response to COVID-19 were interviewed in-depth using a semi-structured approach. The interviews were also subject to peer review panel evaluation. Access to participants was obtained by the researchers, and they were interviewed physically or via Zoom. The questionnaire format was provided in advance. Data analyses were done with ATLS.TI 22. The study identified six themes, including one that focused on the impact of political tensions. The themes were generated by identifying recurring concepts and categories within the participants' quotes.

Results: Numerous instances of the apparent influence of political tensions on the capacity of medical managers and staff were discovered. Among the 13 interviewees, 12 explicitly linked political tensions to a substantial impact, substantiating their perspectives with specific instances. They particularly highlighted the Prime Minister's decision-making process and collaboration with other ministers and emphasized the treasury's role in reconciling the politicians' interests.

Conclusion: The study showcases a thorough understanding of how the Israeli healthcare system tackled the pandemic, addressing the impact of political tensions on it. This understanding presents a unique opportunity to gain insights into how service delivery can be enhanced both within the healthcare system and throughout the country. Numerous lessons and examples provided may be relevant for other countries.

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From Pandemic to War and Routine in Between: 5 Key State-Level Recommendations to Supply Chain Management During National Crisis

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Summary: Strategies and systems developed during COVID-19 were crucial in handling the healthcare supply chain during the "Swords of Iron" war, which began on October 7, 2023. During COVID-19, Logi Group played a central role as the Israeli MOH's supply chain headquarters and developed protocols for handling disruptions in global and domestic supply, providing resilience against logistical challenges. When war erupted, Logi applied its pandemic era methods to address immediate logistical and operational demands. The crises' similarities, such as healthcare systems operating under fire and supply chain challenges, required quick and coordinated responses.

Systems developed, such as an integrated emergency operation center, facilitated coordination between suppliers, hospitals, the military, the government, and logistics companies. The dynamic supply chain models designed during COVID-19 allowed quick adaptation to market and operational disruptions, a capability crucial during the war. Additionally, the reflecting market challenges and barriers influenced healthcare regulations and policies, enabling swift adaptations during war.

The lessons learned design the required operational approach, "emergency routine" rather than a transition from routine to emergency. The five key principles in the strategy for preparedness and operational continuity to address a variety of national crises are:

1. Manage security inventory within operational layers on-site.
2. Regulation for suppliers' operational continuity.
3. No Pareto – every component is crucial.
4. Minimize market concentration.
5. Effective Local production strategy.

Embedding emergency mechanisms within routine operations creates a state of "emergency routine." By doing so, the transition from routine to emergency becomes seamless and efficient, reflecting the reality that such transitions are often immediate and leave no time for setup. The operations during the war underscored the importance of supply chain national strategy, demonstrating that preparedness and multi-sector collaboration in crisis are essential for maintaining continuity and efficiency.

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Prolonged Transport Of A Refractory V-fib Arrest: Lessons Learned From Stretching The Chain of Survival

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Summary: A 39-year-old male developed chest pain while at work and then collapsed. A bystander applied an AED and performed CPR for 15 minutes. ROSC was achieved by the time paramedics arrived. ECG performed at a rural hospital showed anterior ST elevation, and thrombolysis was administered. A HEMS nurse and paramedic team were dispatched to transport the patient to a hospital with a cath lab and CCU. During the 1-hour and 40-minute flight, the patient did not reperfuse, and persistent ST elevation was noted. Despite maximal medical therapy, the patient had multiple episodes of pulseless ventricular fibrillation, necessitating 25 defibrillations and periods of CPR. Due to the patient's unstable status, the supervisory HEMS physician updated the receiving hospital. The Shock Team at the receiving hospital was activated, and appropriate resources were readied for the patient's arrival. Five minutes before

After a brief assessment in the CCU, the patient was transferred to the OR, where ECMO was established under ongoing CPR. The patient was subsequently transferred to the cath lab, where a 100% proximal LAD lesion was identified. A DES was successfully deployed in the LAD. After 3 days, the patient was decanulated from ECMO. He was subsequently extubated and transferred to the ward. Following a 20-day stay in the hospital, the patient was discharged home, ambulatory, neurologically intact, and able to live independently. When the HEMS organization reviewed the case, they recognized the difficulty of delivering prolonged quality CPR in flight and acquired a LUCAS device. This case illustrates the importance of empowering prehospital providers to manage critically ill patients, the value of coordinating with a receiving hospital, and the benefits of clinical audit.

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Comparative Evaluation of Disaster Triage Methods in Traumatic Events: A Retrospective Study

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Introduction: Traumatic events often result in a large number of casualties, and while numerous disaster triage methods exist, there is a lack of evidence comparing their effectiveness.
Methods: Utilizing data from public databases, a retrospective evaluation was conducted on 10,000 patients to assess the value of six disaster triage methods on patient outcomes, specifically mortality. Receiver Operating Characteristic (ROC) curves were employed for the analysis.
Results: The Sacco Score demonstrated the largest area under the ROC curve; however, there was no significant difference in outcomes when compared to methods such as START, CareFlight, etc. ($p > 0.05$).
Conclusion: Based on the current evidence, the differences in effectiveness among these disaster triage methods are not statistically significant. Therefore, it is recommended that methods that are faster and simpler to implement be selected for use in disaster response.

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Decadal Impact of the 'National Ambulance Code' on the Quality & Availability of Ambulances in India

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Introduction: The Ministry of Road Transport and Highways, Govt. of India, on 30th May 2013 approved the "National Ambulance Code (NAC)" as Automotive Industry Standard - 125 (AIS 125) and on 8th September 2016 notified compliance with AIS-125 (Part 1) mandatory for all road ambulances manufactured on and after the 1st April 2018. NAC detailed the constructional and functional requirements of Category M (four wheelers) and L (two & three wheelers) vehicles used for transport and/or emergent care of patients. In this research report, an effort has been made to examine the impact of the 'National Ambulance Code' on the quality and availability of ambulances in India over the past decade.
Methods: The report was compiled after detailed discussions and semi-structured interviews with industry experts, academicians, ambulance procurement teams, and ambulance manufacturers.
Results: It was strongly felt that the National Ambulance Code has, for the first time, legally enshrined the definition of a road ambulance in India. As the ambulance code also prescribes other vehicle-specific parameters like seating, electrical, fire safety, stretcher loading angle, etc., it simplifies ambulance procurements for healthcare providers, who are often not well-versed in automobile engineering aspects. This has also helped ambulance manufacturers standardise their inventory and models, thereby allowing faster delivery of ambulances. The biggest impact of this was felt during COVID-19, when the average turnaround time for new ambulance deliveries was reduced to days vs. months in the days before the ambulance code.
Conclusion: Standardization of basic ambulance design, specifications, and safety requirements is a work in the right direction, as often the end users are medical professionals who are not very well versed with vehicle engineering aspects. However, a right balance has to be struck between standardization and

strangulating innovation. Hence, a periodic review of the Ambulance Code is recommended to ensure any amendments in line with industry and user feedback are incorporated timely.

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Use of Lung Ultrasound in Prehospital Care to Aid in Diagnosis and Management for Patients With Dyspnea: A Case Series

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Summary: Lung Ultrasound (LUS) is a widely utilized point-of-care ultrasound (POCUS) application in emergency and critical care settings for assessing dyspneic patients. It aids clinicians in differentiating among various potential diagnoses, including congestive heart failure, chronic obstructive pulmonary disease, pneumothorax, pleural effusion, and pneumonia, thereby guiding appropriate treatments and interventions. In the prehospital setting, clinical decision-making can be especially challenging due to limited diagnostic resources when distinguishing these common causes of acute dyspnea. POCUS is a tool that has been used in Helicopter Emergency Medical Services (EMS) for over a decade, but has only recently found its way into ground ambulance services. Advances in technology have made ultrasound machines more portable, durable, and affordable, improving both the accessibility and feasibility of using this valuable diagnostic tool in prehospital care. While POCUS has increasingly been integrated into prehospital training protocols for various applications, LUS has not been widely adopted in this context despite its recognized utility in the management of dyspneic patients and its relative ease of training. New Orleans EMS in Louisiana, USA, has begun incorporating LUS education into their POCUS training for providers. Paramedics and advanced EMTs are now employing basic LUS to evaluate dyspneic patients in the field, using ultrasound findings to inform treatment decisions. This case series presents several patient cases from this initiative, demonstrating how LUS contributed to identifying the etiology of dyspnea and highlighting typical pathologic findings observed during LUS examinations. We will further explore how these findings lead to a change in management that would not have been available without the use of POCUS in the prehospital setting.

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Development and Application of a Hyperbaric Oxygen Chamber-Based Index of Emergency Medical Response in Disasters

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Introduction: Hyperbaric oxygen treatment (HBOT) is often required in various disaster situations, such as fires, explosions, chemical accidents, and ship sinking rescues. Hyperbaric oxygen chambers (HBOCs) capable of performing such treatment are key resources for responding to disasters. As such, their quantity and placement must be appropriate. In this study, assuming a disaster situation that requires multiple HBOCs to be deployed simultaneously, the author investigated and analyzed the regional deployment status of HBOCs in Korea and their adequacy for toxic gas disasters based on medical institutions with HBOCs, and developed a scoring index to express this.
Methods: In the event of a disaster requiring HBOT, all hospitals with HBOCs in Korea could theoretically participate, so hospitals with HBOCs were examined. The distribution of HBOCs by region, type, and population was then analyzed, as well as the ability to perform simultaneous HBOT and HBOT in disasters by region. The results were used to derive the Critical Patient Response Index (CPRI) and Total Patient Response Index (TPRI) for hazardous gases and comparison by region.
Results: In Korea, a survey of HBOCs over the past 15 years found that the first wave of expansion in 2015-2016 and the second wave of expansion since 2019 have resulted in increased deployment in previously underserved areas. However, when analyzed based on population base, concurrent capacity, and treatment performance, the deployment of HBOCs was skewed toward some regions. Expressed as an index, the CPRI ranged from 0.045 to 1.5, and the TPRI ranged from 0.215 to 3.222, allowing for a clear comparison of disaster response capabilities.
Conclusion: The index developed in this study has limitations, as it may not include all actual hospitals and may not reflect differences in human resources or operations. Nevertheless, the index can be used objectively and relatively to represent a region's ability to respond to disasters requiring HBOT.

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Survival in Snow: Avalanche Airbags Through the Eyes of Rescuers and Mountain Professionals, a Cross-Sectional Study

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Introduction: Avalanches pose significant dangers to winter recreationists, and avalanche airbags have become a prominent safety device. Airbags could increase users' confidence, leading to risk compensatory behaviors, and paradoxically, putting users at a greater hazard despite their proven mortality reduction. This study assesses expert opinions and behaviors toward avalanche airbags in the Alpine region. The objective is to

investigate the perception of skiing instructors, mountain guides, and rescuers of alpine countries toward airbag effectiveness, efficacy in preventing mortality, and their role during search and rescue operations.
Methods: A cross-sectional survey of skiing instructors, mountain guides, and rescuers (i.e., experts) working in alpine countries (France, Italy, Switzerland, Germany, Liechtenstein, Austria) was conducted. Participants were selected via snowball sampling. Topics included training and experience of experts, risk propensity of clients and avalanche casualties, perception toward search and rescue procedures, and perceived efficacy of avalanche airbags.
Results: Expected outcomes will cover expert opinions on the advantages and limitations of airbags, the influence of airbags on users' risk-taking and risk compensation, airbags pros and cons in search and rescue scenarios, and general recommendations.
Conclusion: This study will contribute to understanding how avalanche airbags are viewed by experts in snow-related mountain casualties. Eventually, this will add knowledge to better shape educational programs for winter recreationists, best practices, and policies for avalanche airbag use in high-risk environments.

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Evaluating the Effects of Outdoor Simulation Training on Physician Knowledge, Confidence and Competence in Austere and Wilderness Environments

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Introduction: Wilderness medicine is a specialized field of training focused on providing medical care in remote and austere environments. Training providers on the unique aspects and limitations of austere/wilderness scenarios. It encompasses a wide range of skills, including trauma management, environmental emergencies, and survival techniques. Practitioners must be adept at improvising and working with limited resources, making quick decisions, and managing patients until they can reach a higher level of care. Simulation promotes higher confidence in trainees, though little studied in wilderness/austere medicine.
Methods: This study assessed the effect of outdoor simulation on emergency medicine learners using surveys surrounding aspects of austere medicine knowledge and comfort. Surveys were obtained before and after the 2-hour educational session and a 2-hour simulation. These included general wilderness medicine, temperature-related illness, mountain medicine, environmental exposures and emergencies, medical equipment planning, and patient splinting and extraction/evacuation. Surveys were conducted using a 5-point Likert scale.
Results: Results showed significant improvement across all areas, with average gains ranging from 1.0 to 1.5 points. The most substantial increases were noted in mountain medicine (1.2, 1.5), lightning strike management (1.2, 1.6), medical gear planning (1.6, 1.6), and medications for austere environments (1.6, 1.6). Participants also reported increased familiarity with poisonous plants and fungi (1.2) and improved comfort with splinting techniques (1.4). Overall, confidence in environmental medicine, wilderness planning, medical pack creation, patient management, and patient extraction or evacuation improved by an average of 1.5 points.
Conclusion: The wilderness medicine training improved learners' familiarity and comfort with various austere conditions and management. Mountain medicine, lightning strike management, medicine gear planning, and medications for austere settings were the areas that demonstrated the most improvement in familiarity and comfort in management. This training notably increased participants' comfort and willingness to provide patient care in remote settings, underscoring the value of wilderness medicine simulation training.

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Transition Metal Ion-Protein Based Liquid Hemostatic Foam for Prehospital Management of Incompressible Hemorrhage

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Summary: Mortality resulting from incompressible hemorrhage is the primary cause of pre-hospital deaths, highlighting the urgent need for the development of innovative hemostatic materials capable of effectively managing this type of bleeding. Inspired by the long-lasting foams constituted by transition metal ion-protein complexes, an injectable and stable liquid hemostatic foam has been developed, composed of gelatin/silk fibroin and hemostatic transition

metal ions, Ca^{2+}/Fe^{2+}. The foam was rapidly obtained using a simple dual-syringe Tessari method. The dimensional changes of the foam were characterized, and its interaction with blood was observed under an optical microscope. The rheological properties of the foam were investigated using a rheometer. The hemostatic performance of the material was validated using rat liver laceration models, femoral artery bleeding models, and porcine femoral artery injury models.

A liquid hemostatic foam was successfully prepared for rapid hemostasis and short-term protection of non compressible wounds. The prepared foam exhibits excellent stability and mechanical strength, meeting the requirements for addressing incompressible hemorrhage. While achieving rapid hemostasis, the foam can be easily removed from the wound without disrupting the clot or causing secondary bleeding, which aids in pre-hospital rescue and the expedited transportation of casualties. This manuscript aims to further advance rapid prehospital treatment for non-compressible hemorrhage, thereby minimizing mortality from such bleeding incidents as much as possible.

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Nature and Appropriateness of Medical Interventions Performed by Law Enforcement Officers (LEO) after Officer-Involved Shootings (OIS)–An Open-Source Video Analysis

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Introduction: Although LEOs frequently provide medical care to injured individuals, this care is more likely to be perceived by EMS as harmful compared with non-LEO emergency medical responders. Despite the rapid provision of LEO care after OIS, no mortality benefit has been demonstrated. The purpose of this study is to characterize the nature and appropriateness of care rendered by LEOs.
Methods: Retrospective analysis of open-source video footage of OIS occurring between January 1, 2023, and December 31, 2023. Only footage containing LEO medical care was included in the final cohort. Care provided, appropriateness of care, presence of cognitive errors, and mortality outcomes were evaluated. The study was deemed exempt by the Mayo Clinic Institutional Review Board.
Results: Of 347 videos, 87 were included in the final cohort. Time to LEO intervention was 170.2 ± 218.6 s; care was rendered in < 120 s in 59.2% of cases and > 300 s in 14.3%. Mortality was 55.3%. Torso trauma occurred in 58.6% of cases, while isolated extremity trauma occurred in 19.5%. Tourniquets were placed in 27/30 casualties and were not indicated in 18. One of three casualties who did not receive a tourniquet may have benefited from one. Chest seals were appropriate in 29 casualties and applied in 18. Hemostatic gauze was applied in 14 casualties; it appeared appropriate in 5 and was incorrectly applied in 6. CPR was performed in 25 casualties; 4 had signs of life and 4 received CPR from a standing position. Difficulty identifying medical supplies appropriate for the injury was noted in 11 videos. Cognitive compromise was noted in 14 videos.
Conclusion: Although care was rapidly rendered in the majority of cases, mortality remained high. Inappropriate or incorrectly applied medical interventions were commonly noted. Multiple opportunities to improve LEO medical care exist.

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Comparison Of Three Airway Equipment in Prehospital Care in Terms of Placement Time, Ease, and Effectiveness

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Introduction: Airway management, ventilation, and adequate oxygenation are an essential part of prehospital care. The easiest airway can be the most difficult airway for the inexperienced person, especially in disaster situations where more patients will need airway interventions. The combination of Guedel & BVM or perilaryngeal supraglottic airways (LMA) are two airway management techniques that are used in the field. However, effective ventilation with a combination of Guedel & BVM cannot be provided in inexperienced hands due to air leakage. Regarding LMA, there is a decisional dilemma regarding its use by inexperienced providers in prehospital settings. Therefore, new airway equipment providing both airway control & ventilation is needed for prehospital airway control and ventilation. There is new supraglottic airway equipment, guedel-type cuffed oropharyngeal airway (Tulip airway), which can provide both airway control and ventilation support. The study compares Guedel & BVM, LMA, and Tulip airway on prehospital use for airway management.
Methods: The study group included military first aid school students. They used Guedel & BVM, Tulip airway, and LMA on the manikin-based simulator. Ventilation adequacy was assessed visually by inflating the balloon that stimulated the lung. Time from insertion to achieved ventilation, instructor intervention, and maneuver requirement were recorded.
Results: The median time from Insertion to achieved ventilation of Tulip airway on manikin was shorter than Guedel & BVM and LMA. Tulip airway requires less instructor intervention and maneuver requirements.
Conclusion: If we grade them from basic to advanced, Tulip airway combines Guedel & BVM and LMA. Although the Tulip airway is simpler than LMA, it is as effective as LMA. As providing ventilation with the simplest airway device is important in disaster situations, Tulip airway, as a guedel-type cuffed oropharyngeal airway, can be evaluated for disaster medical care guidelines.

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Development of Drone Integrated Artificial Intelligence Based Mass Casualty Triage Decision Support System (DIABMaCTDeS)

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Introduction: Triage and casualty evacuation are two essential components of the medical management of mass casualty incidents. However, there is a notable lack of scientific evidence supporting the validity of mass casualty triage protocols. This study aims to develop a 'Drone Integrated, Artificial Intelligence-Based Mass Casualty Triage Decision Support System' (DIABMaCTDeS) to assist on-scene response teams

in making triage decisions and to enhance data transfer from the incident site to emergency management centers.
Methods: The development of the system occurred in four phases: (i) respiratory rate, pulse, oxygen saturation and body temperature detection algorithms were created by utilizing image processing techniques applied to drone captured footage; (ii) Drone Integrated Mass Casualty Triage Algorithm (DIMaCTA) was developed using the Delphi method; (iii) an artificial intelligence-based decision support system was built upon the DIMaCTA algorithm; (iv) a user application was developed to facilitate real-time data transfer between field teams and emergency management centers.
Results: According to the preliminary results, the accuracy rate of the pulse, respiration, oxygen saturation, and body temperature detection algorithms varied between 95% and 99%. In the Delphi study, the interquartile range for expert opinions on decision points and scoring criteria was determined to be 1.2, and the total percentage of those who answered "partially agree" and "strongly agree" regarding the structure of the algorithm was 70% or above. These results show that a consensus was reached on the parameters and decision points in the algorithm.
Conclusion: The drone-integrated system enables faster scene access than ground teams, providing data on scene security, victim location, vital signs, and triage priorities. It allows the most urgent cases to be identified and evacuated quickly and safely. The system will significantly aid in the rapid assessment of casualties and data transfer to emergency management centers, both in urban and hard-to-access remote areas, especially where responder safety is uncertain.

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Enhancing Operational Efficiency in Multi-Functional Aero-Support Agencies: Insights from the Government Flying Service Emergency Response Operations

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Introduction: The Government Flying Service (GFS) plays a crucial role in Hong Kong's emergency response system as the exclusive aero-support agency. Its responsibilities include medical evacuation, in- and off-shore search and rescue, fire-fighting, underslung load operations, and various other tasks. As a versatile and multi-functional entity, these responsibilities also introduce significant challenges for operational managers and coordinators in planning and resource management during incidents. A survey was designed to investigate the challenges faced and the vital information required during complex emergency operations management.
Methods: An anonymous questionnaire was designed and distributed to 16 operation managers and 24 coordinators. They were asked to rate the challenges they faced in managing complicated emergency response operations and the vital information required to support their decision-making and operational coordination. Each listed item was scored on a 10-point Likert scale, with points labeled as "Least challenging" (1) and "Most challenging" (10), as well as "Least important" (1) and "Most important" (10), respectively.
Results: Among the 28 (70%) respondents, 11 are operation managers, and 17 are coordinators. For managers, the most challenging condition is "Discrepancies between reported information from the tasking agency and the real situation" (mean = 7.73); the most important information is "Aircrew availability" (mean = 8.18). For coordinators, the most challenging condition is "Multiple active communications (phone, radio, fax, colleague)" (mean = 8.06); the most important information is "Casualty condition (for Search and Rescue, Medevac)" (mean = 7.71).
Conclusion: By analyzing survey data on the critical issues encountered and essential information needed during complex emergency scenarios, this study seeks to provide valuable insights for enhancing operational efficiency and decision-making processes within multi-functional aero-support agencies. The findings have the potential to drive improvements in operational management practices and inform future training strategies for managers and coordinators in similar contexts.

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Factors Contributing to Pre-Hospital Care Delays in Trauma-Related Mass Casualty Incidents: An International Survey for Pre-Hospital Clinicians

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Introduction: Mass-casualty incidents (MCIs) have increased globally over the last two decades, both in number and magnitude. Preventable on-scene mortality in MCIs may result from delays in pre-hospital time (PHT). This study aimed to identify factors contributing to PHT delays and explore pre-hospital care providers' (PHCPs) suggestions to optimize PHT.
Methods: A cross-sectional, global online survey was conducted between May and August 2024. PHCPs with experience in at least one MCI were invited via professional associations and social media. Data was collected via a validated questionnaire, including Likert-scale statements to measure agreement levels, multiple-choice, and open-ended questions. Queen Mary Research Ethics Committee (DSREC_01_v2_F_Alruqi) approved.
Results: There were 225 participants from 54 countries. Of these, 29.78% were from low- and middle-income countries (LMICs), and 70.22% were from high-income countries (HICs). Most participants were paramedics (62.22%), followed by physicians (16.44%), EMTs (7.56%), nurses (5.33%), others (4.89%), and first responders (3.56%). The median number of MCIs experienced was 5 (IQR 3 – 14); HIC: 5 (IQR 3 – 10); LMIC: 10 (IQR 5 – 20). The majority of respondents cited poor communication (84%) and geographical challenges (80%) as primary factors associated with extended PHTs. LMICs reported that equipment inadequacy and hospital

distance were also linked to extended times (75% and 63%, respectively). Resource limitations were more of a challenge for LMICs (30.77% vs 18% in HICs), whereas policy and administrative issues affected 20% of HIC participants compared to none from LMICs. Almost all participants suggested that regular training (95%) and past MCI experience (90%) were key factors for optimizing PHTs. HIC respondents emphasized the benefits of effective communication for shorter PHTs, and improved security was prioritized in LMICs.
Conclusion: While geographical location and distance are nonmodifiable factors, improving communication in MCI settings may decrease PHTs. Effective communication strategies should be integrated into MCI training and planning.

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Enhancing Triage for Elderly Earthquake Victims: A Comprehensive Analysis Using LASSO Regression and Nomogram Development

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Introduction: Earthquakes pose a significant threat to public health, particularly among the elderly population, who are more susceptible to injury and have a higher prevalence of comorbidities. Traditional disaster triage protocols may not adequately account for the complex interplay between acute trauma and pre-existing health conditions. This study aims to refine the triage process for elderly earthquake victims by integrating comorbidities into the assessment.
Methods: We conducted a retrospective analysis of a large dataset comprising 25,006 trauma patients aged 60 and older, extracted from public databases. The dataset included information on patient demographics, pre-existing comorbidities (such as hypertension, coronary heart disease, cancer, and diabetes), post-injury vital signs, and outcomes (survival or death).

To identify the most significant predictors of mortality among these patients, we utilized the Least Absolute Shrinkage and Selection Operator (LASSO) regression technique. We applied LASSO regression with cross validation to determine the optimal penalty parameter (lambda) that minimizes the mean squared error and ensures the model's generalizability.

Variables with non-zero coefficients in the LASSO model were deemed significant predictors of mortality. Using these predictors, we developed a nomogram—a visual, user-friendly tool—to assist healthcare professionals in making informed triage decisions in the chaotic aftermath of an earthquake.
Results: The LASSO regression analysis revealed renal failure, coronary heart disease, and the Revised Trauma Score (RTS) as the most influential predictors of mortality in the elderly trauma patients ($p < 0.05$). The nomogram incorporating these factors was validated and shown to have good discriminative ability and calibration.
Conclusion: The integration of LASSO regression and nomogram development offers a statistically rigorous and practical approach to enhancing the accuracy and efficiency of triage decisions for elderly earthquake victims, potentially improving survival rates and resource allocation in disaster response scenarios.

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Injury Patterns and Associated Flight Factors in Air Carrier Turbulence Accidents

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Introduction: Turbulence accidents in aviation are common and can cause serious injuries, but injury patterns and relevant flight characteristics are often overlooked. This study aimed to analyze aviation accidents, classify turbulence-related injuries, and identify associated flight factors.
Methods: This study was a retrospective database and chart review. The National Transportation Safety Board database was searched for air carrier accidents with serious injuries or fatalities from January 2014 to December 2023. Accident charts were hand-searched, and flight details with injury patterns were manually extracted and categorized by axial or extremity location and Anatomic Profile (AP) (Category A = head and spinal cord, Category B = thorax and anterior neck, Category C = remaining serious, Category D = remaining non-serious injuries). Injury types and severity are compared by flight phase and seatbelt status.
Results: A total of 153 air carrier serious accidents resulted in 156 casualties with serious injuries and five deaths. Turbulence was the most common cause (107, 69.9%) and was responsible for 117 (75.0%) casualties with serious injuries and no deaths. Fractures were the most common injuries (112, 72.3%) and were more likely sustained in turbulence-related accidents (OR 4.79, 95% CI 1.63-14.07). Location of fractures was axial in 34 (22.8%) and extremity in 78 (52.3%). AP was Category A in 16 (10.7%), B in 11 (7.4%), and C in 102 (68.5%) injuries. Fractures were less likely during cruising (OR 0.09, 95% CI 0.01-0.80) and more likely during descending (OR 21.95, 95% CI 1.19-403.4) flight phases. There was no significant association between seatbelt sign presence and fractures (OR 2.22, 95% CI 0.09-52.1).
Conclusion: Turbulence was the leading cause of aviation accidents and inflicted serious injuries like head and spine fractures, especially during flight descent. These findings can help airlines

prioritize safety measures and healthcare responders prepare for relevant injuries.

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Securing Prehospital Care and Hospital Capacity in Mass Casualty Incidents: Systemizing Information Sharing for a Coordinated Medical Response

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Introduction: To prevent preventable deaths in mass casualty incidents (MCIs), securing prehospital care at the scene and hospital capacity for patient transport is key. For this purpose, the alert function of EMISHP (Emergency Medical Information System in Hyogo Prefecture) was innovated in 2003, allowing fire departments and hospitals to share information over the Internet. With this alert function, fire departments have been able to apprise hospitals of the MCI in a timely way.
Methods: Retrospective analysis of MCIs between 2003 and 2024 in which the alert function of EMISHP was activated. For each number of casualties, the duration from emergency call to activation of alert function (activation time), the duration from emergency call to clearance of alert function (S/R time), and the number of destination hospitals were evaluated. Also evaluated was the number of training exercises between 2003 and 2024.
Results: In the past 21 years, EMISHP's alert function has been activated for 330 MCIs. Casualty count ranged from 0 to 662 (median value=5). A Japan Railways derailment accident recorded the highest number of casualties. Activation time ranged from 1 to 417 minutes (median value = 15). S/R time ranged from 13 to 2,556 minutes (median value 73). Several destination hospitals ranged from 0 to 54 (median value = 3). In all cases, information was shared between fire departments and hospitals, while Hyogo Emergency Medical Center (the principal hub hospital for disasters in Hyogo) oversaw and coordinated the medical response, e.g., securing hospital capacity, dispatching EMTs to the scene. A total number of training exercises was 416/21 years (average nearly 20/year).
Conclusion: Securing time and medical resources in response to MCIs becomes possible when information is shared between fire departments and hospitals in a timely, organized way. EMISHP's alert function—its use reinforced through frequent training exercises—has contributed much to this purpose.

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Cold O+ Blood for Life-Saving Transfusion Delivery in the Prehospital Setting: The COLD Study

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Introduction: Since 2018, there has been a vast expansion of prehospital blood programs from less than 10 to greater than 150 in 2024. The trauma adage of the "Trauma Triad of Death" involves limiting hypothermia, acidosis, and coagulopathy. Accordingly, the vast majority of prehospital blood programs have some type of warmer in their system to at least partially warm products before administration; however, there is limited evidence behind this practice in the prehospital setting. When New Orleans EMS began their blood program in 2021, the funding was not available for warmers, and the decision was made to embark on a prehospital cold blood program, with cold pRBC ranging in temperature from 2° to 8° C. This study hypothesized that the administration of 2 units of cold pRBC would not result in hypothermia nor have negative effects on the patients.
Methods: This retrospective study used data from New Orleans EMS patient records merged with local hospital patient records from the years 2021 to 2024. Out of the 285 patients who received blood transfusions during this period, a total of 104 patients were included in the study. These patients received 2 units of unwarmed pRBC utilizing a LifeFlow® hand-operated rapid infuser, for a variety of indications including trauma and medical hemorrhages.
Results: Patient ages ranged from 15 to 71, with an average of 37 years. 88% were male and 12% were female. 82% of individuals sustained penetrating trauma. The average temperature change was -0.01 °C (95% CI, -0.12 to 0.14) after rapid transfusion of 2 units of unwarmed pRBC.
Conclusion: This study demonstrated that unwarmed blood did not cause a clinically significant change in body temperature. These results suggest that blood warmers may not be necessary for prehospital transfusions of 2 units of pRBC or less.

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Helicopter Emergency Medical Services within Resource-Limited Settings of Nepal: Insights from a Tertiary Care Center

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Introduction: In times of disaster in rural settings, helicopter rescue is crucial. Since the 1990s, helicopters without any

medical support have been used to transport patients from remote areas to tertiary care centers. In 2013, private organizations improved pre-hospital care by adding medical teams and equipment, making Helicopter Emergency Medical Services (HEMS) a critical part of emergency care, particularly in remote areas.

Methods: This retrospective observational study analyzes patients who were transferred by helicopter to Grande International Hospital (one of the tertiary centers in Kathmandu, Nepal) between May 10, 2018, and May 9, 2024. Patient's demographics (age, gender, ethnicity), medical conditions/outcomes, and geographic origins were analyzed. Data was analyzed using SPSS version 25.

Results: The 782 helicopter rescues show that 68.8% of the participants were men, with a mean age of 47.21 years. Of them, 90.92% were Nepalese, and the majority of cases (42.23%) were transferred from Province 4 of the country. Pneumonia (211 cases), trauma (107), neurological emergencies (85), cardiovascular emergencies (44), and COVID pneumonia (140) were among the major medical reasons for transfer. The COVID pandemic highlighted the importance of HEMS. 40.4% of cases were self-landed, whereas 59.6% of cases were accompanied by HEMS physicians. Interhospital transfers and a sizable portion of high-altitude operations were part of many rescues. With an average hospital stay of 13.73 days and a 14.3% mortality rate, the majority of patients were admitted to the intensive care unit.

Conclusion: HEMS has significantly saved lives over the years at a particular tertiary hospital. This data allows for advancing HEMS use in a rural setting like Nepal, especially during times of disaster, to provide acute medical and rescue care. It is imperative to address and evaluate HEMS accessibility and its importance regarding infrastructure, cost, geographic diversity, and the country's vulnerability to disaster.

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Mountain Multi-Casualty Incidents in Sweden: Frequencies and Perceived Rescue Capacity

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Introduction: More than one billion people live in mountain areas worldwide. Increasing mountain tourism and decreasing visitor preparedness may increase the risk for major incidents, and climate instability may affect incident mechanisms, frequencies, magnitudes, as well as conditions for medical evacuation. In its guidelines for mountain multi-casualty incidents (MCIs), the International Commission for Alpine Rescue (ICAR) notes that, compared with an urban environment, a lower number of casualties may be considered an MCI because resources are more limited. In Sweden, previous research on mountain rescue medical capacity is lacking.

Aim: To describe the incidence of mountain MCIs in Sweden and assess the corresponding perceived capacity of Swedish mountain rescue personnel.

Methods: Retrospective analysis of all mission reports in the national Swedish Police Registry on Mountain Rescue 2018–2022 (n = 1543) was performed to describe frequencies of incidents with ≥2 casualties. 21 participants from the Swedish police governed and volunteer-based organization, Swedish mountain rescuers, from 4 different mountain counties were interviewed to describe self-assessed capacity concerning MCIs. The collected data were analyzed using qualitative content analysis.

Results: 216 (14%) of all incidents 2018–2022 involved ≥2 casualties. Of these, 39 involved 3 casualties, 21 involved 4 casualties, and 15 involved 5 casualties. Interviewees indicated the context-dependent number of casualties above which mountain rescue resources may become insufficient as 2-4. Impending factors indicated were organizational (e.g., inter-organizational communication, dependency on other organizations, mobilization time), legislative (trained medical professionals prohibited from administering drugs), and human (e.g., rescuer fatigue).

Conclusion: A notable proportion of mountain incidents in Sweden exceeds the self-assessed maximum capacity of Swedish mountain rescue. The dependency on other organizations for medical evacuation motivates further study into possible international joint rescue ventures, exercises, and information exchange. Current legislation regarding the administration of medication by trained medical professionals warrants further discussion.

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Mortality and Injury Patterns in Helicopter Emergency Medical Services Accidents

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Introduction: Helicopter Emergency Medical Services (HEMS) is lifesaving but can itself lead to serious or fatal accidents. Current research is limited to descriptions of accidents, but the specifics of casualties and injuries are unavailable. This study aimed to detail mortality and injury patterns and examine associations with casualties involved.

Methods: The study was a retrospective database and chart review of HEMS accidents from the National Transportation Safety Board database from 2013 to 2022. Accident charts were hand-searched, and details of flight, crew, patients, and injuries were manually extracted using a predefined form. Injuries from serious accidents were categorized by type and Anatomic Profile (AP) (Category A = head and spinal cord, Category B = thorax and anterior neck, Category C = remaining serious, Category D = non-serious injuries).

Results: Of 72 total HEMS accidents, 28 (38.9%) resulted in at least serious (27) or fatal (45) injuries. These flights carried a total of 10 patients with 84 crew, of whom 5 (50%) patients and 40 (47.6%) crew died. Most accidents occurred without patients aboard (18, 64.3%). However, when aboard, patients were as vulnerable to fatal injury as crew (OR 1.10, 95% CI 0.30-4.08). Injury patterns were most often axial (13, 12.4%) and extremity fractures (6, 5.7%), burns (6, 5.7%), axial (4, 3.8%) and extremity blunt trauma (2, 1.9%), and hemopneumothoraces (2, 1.9%). AP of injuries were A in 7 (6.7%), B in 8 (7.6%), C in 15 (14.3%), D in 13 (12.4%). Causes of death were skull, spine, and chest fractures, burns, hemothorax, intra-abdominal lacerations, lower limb amputation, smoke inhalation, hypothermia, and an acute cardiac event.
Conclusion: HEMS accidents were lethal to both crew and patients. Fatal injuries included fractures of the skull and spine, burns, and visceral lacerations. Mortality and injury patterns identified in this study can inform HEMS mitigation measures and treatment preparation for responders.

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Using Motor Versus Total Glasgow Coma Scale to Predict Need for Intensive Care Management or Mortality in Moderately-to-Severely Injured Children

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Introduction: Emergency department trauma triage can be challenging for injured pediatric patients. For verbal children (and adults), the Glasgow Coma Scale (GCS) is commonly used to assess disability, and a modified GCS assessment tool is used for the pre-verbal age group. A common disability assessment for both verbal and pre-verbal pediatric patients to risk-stratify the need for higher acuity trauma care or mortality would be useful.

The primary aim was to investigate whether using only the motor component of GCS (mGCS) compared to total GCS (tGCS) was associated with intensive care management or mortality in the pediatric population. The strength of association for the composite outcome for verbal (≥ 2 years old) and pre-verbal children (< 2 years old) was also analyzed.
Methods: This was a retrospective review of patients <18-years-old, who presented to KK Women's and Children's Hospital's emergency department (ED) with moderate (Injury Severity Score (ISS 9-15) to severe (ISS>15) traumatic injuries from January 2012 to December 2021. The data were prospectively collected from the hospital's trauma registry.
Results: Among 582 included for analysis, the median age was seven years old (interquartile range 2-12), who were predominantly male (63.4%). 22.4% of patients died or required ICU care. Overall, adjusted relative risks (aRR) for tGCS and mGCS to predict ICU/mortality were 0.86(95%CI: 0.84 to 0.89) and 0.76(95%CI: 0.70 to 0.81), respectively. The aRR to predict for ICU/mortality in children <2-years-old for tGCS was 0.83(95%CI: 0.78 to 0.88), and mGCS was 0.76(95%CI: 0.70 to 0.81). The aRR to predict for ICU/mortality in children ≥ 2 years old for tGCS was 0.88(95%CI: 0.84 to 0.91), and mGCS was 0.76(95%CI: 0.70 to 0.83).
Conclusion: mGCS may be a viable alternative to tGCS for disability assessment to predict the need for ICU care or mortality in moderately to severely injured verbal and pre-verbal children.

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Relative Factors for Survival Outcome of Out Hospital Cardiac Arrest Patient in Det-Udom District, Ubon Ratchathani

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Introduction: This study aimed to identify factors related to the survival outcome of out-of-hospital cardiac arrest patients in the emergency department at Det-Udom Crown Prince Hospital.
Methods: This retrospective descriptive study collected data of out-of-hospital cardiac arrest patients at the emergency department during January 2022 and December 2023 from the hospital database. The data was analyzed by descriptive statistics and the Chi-square test or Fisher's exact test.
Results: Among the 168 patients, 72% were male, age average, 55 years. Incidents occurred at home (56.5%), and cause of cardiac arrest by accidents being (31.5%). The sustained return of spontaneous circulation was 25.8%. The survival to hospital admission was 24.1%, and survival with a good neurological outcome (Cerebral Performance Category; CPC) Cat I-II was 2.15%.

The factors significantly associated with out-of-hospital cardiac arrest survival (P-value<0.05) were as follows: The associated factors of failure in resuscitation were diabetes (Odd = 2.676), hypertension (Odd = 2.333), and cardiac arrest due to accidents (Odd = 2.509). During transportation factors associated with improved patient survival; defibrillator use (Odd = 0.430), chest compressions (Odd = 0.417), fluid administration (Odd = 0.430), and adrenaline administration (Odd = 0.467). Additionally, factors related to emergency medical services include response time, on-scene time, chest compression techniques, opening the airway, oxygenation, and type of ventilation.
Conclusion: Enhancing cardiopulmonary resuscitation (CPR) skills, expanding emergency medical response units to cover broader areas, and ensuring rapid access to emergency medical services can significantly increase the survival rate of out-of-hospital cardiac arrest patients.

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Civilian Prehospital Care in Armed Conflict - A Scoping Review

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Introduction: Civilian prehospital care in armed conflicts has gained critical importance as modern warfare increasingly affects civilian populations. While prehospital care in conflict zones has traditionally focused on military personnel, the growing number of civilian casualties necessitates tailored approaches. This scoping literature review assesses current knowledge on civilian prehospital care in conflict zones, examining challenges, innovations, and potential directions for improving emergency responses in these high-risk environments.
Methods: A systematic scoping review was conducted following the Joanna Briggs Institute guidelines. Research databases, including PubMed and Web of Science, were searched using keywords such as "prehospital," "armed conflict," and "civilian." Studies were screened based on the inclusion criteria: non-military civilian populations, prehospital care, and set in armed conflict zones. Included studies were analyzed to identify common themes, challenges, and best
practices.
Results: Twenty articles met the inclusion criteria. The review highlighted several recurring themes: innovations adapted from military prehospital care, the critical role of Trauma Stabilization Points (TSPs), challenges in resource allocation, logistical barriers, and the psychological toll on patients and responders. Findings suggest that while military strategies like TSPs have shown potential when adapted for civilians, their implementation faces challenges due to limited resources, security risks, and a lack of trained personnel. Community-based first responders and non-governmental organizations (NGOs) play vital roles in providing care where formal medical systems are inadequate.
Conclusion: Civilian prehospital care in conflict zones requires adaptable, resource-efficient strategies to manage logistical and operational constraints. The integration of technology, training of local responders, and community resilience building are essential for future progress. Further studies are urgently needed to assess and improve current practices in medical evacuation and stabilization in low-resource, unsafe environments.

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The Development of a New Aerial Search and Rescue System in Greece: A Systematic Literature Review.

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Introduction: Greece is one of the 10% of European Union countries that do not have a unique aerial Search and Rescue (SAR) system to cover primary and secondary air transport by specialized personnel. There are innumerable difficulties in terms of search, rescue, and air transportation. Complications are mainly related to the small territorial coverage, but also a disproportionately large range of the sea area of Greece. As a part of a wider empirical qualitative research, this systematic literature review aimed to provide a comprehensive description of existing aerial SAR systems worldwide, offering a framework for further developing new system capabilities that Greece can use to reduce the fatality rates at the accident scene.
Methods: A systematic integrative literature review was used according to Whittemore and Knafl's descriptions. The databases investigated were PubMed, CINAHL, Scopus, Web of Science and EMBASE to find papers addressing the above aim. The electronic search strategy identified 573 potential studies. Following title, abstract and full-text screening, 20 studies met the eligibility criteria for final inclusion.
Results: The review revealed that regular simulation-based training, including fatigue management, emergency procedures, and scene leadership, is crucial for an effective aerial SAR system. Additionally, it is necessary to have an increased number of air bases and fleet modernization, which enables the fast transportation of patients. The use of drones and robust real-time communication between SAW teams can also maximize efficiency and safety.
Conclusion: For the development of a new aerial SAR framework, it is important to prioritize various components. These include communication technology and infrastructure and the development of a training culture for all medical staff by taking into account local mission profiles and the individual needs of the personnel. An effective aerial SAR system is crucial to promptly locate victims and save lives.

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Field Medical Response to Aircraft-Related Mass Casualty Incidents: A Narrative Scoping Review

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Introduction: While statistically uncommon, aircraft-related MCIs pose a wicked challenge for disaster response systems because the sudden surge of numerous critically injured patients can quickly overwhelm local healthcare resources. Aircraft disasters present unique and specific considerations like jet fuel fires, debris, and multi-agency involvement. No study thus far has systematically examined current literature to consolidate best practices for an optimal field medical response to an aircraft-related MCI. This narrative scoping review aims to analyze lessons learned from previous incidents and exercises to guide future preparedness efforts.
Methods: Following the PRISMA-ScR guidelines, the authors systematically searched PubMed and Cochrane using MeSH keywords. A total of 29 out of 518 retrieved articles were eventually included in the qualitative synthesis.
Results: This review utilized the CSC-ATT/ETHANE framework advocated by Major Incident Medical Management and Support. Command and control is the most critical element to ensure coordinated responses across various

agencies. In the SQ006 crash, the airport fire department was designated as the lead agency but focused solely on fire suppression and failed to establish incident command. Safety concerns include hazards like spilled aviation fuel, toxic gases, live ammunition (e.g. the Pope Air Force Base crash), and environmental factors (hypothermia, lightning, heat exhaustion). Maintaining communications can be challenging due to ambient noise and radio-traffic congestion (e.g. the 2015 TransAsia crash), worse since crash sites typically span large search areas and may have scant cellular reception. Efficient triage, treatment, and transport systems can improve outcomes for survivors, who often suffer from spinal injuries, head trauma, and extremity fractures. Conveyance with spinal immobilization should be considered, as a significant proportion (18% in the TK1951 crash) may sustain spinal injuries.

Conclusion: By analyzing experiences learned from previous incidents, this scoping review provides actionable insights to better optimize the field medical response in the chaotic aftermath of an aircraft MCI.

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Patients With Serious Cardiovascular Disease Evacuated by Air Medical Evacuation Squadron, Koku-Jieitai (Japan Air Self-Defense Force) - A Comparison of Adult and Pediatric Cases

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Introduction: Patients with serious cardiovascular diseases (CVDs) can be treated at a few facilities, and often require long distance transport. However, it requires extensive medical equipment. When alternatives are lacking, clinicians may request the Self-Defense Forces to transport these patients under "disaster relief" protocols. In this study, we compared adult and pediatric CVD cases transported by the Air Medical Evacuation Squadron (AMES).

Methods: Eighteen pediatric and 13 adult cases of CVD evacuated by AMES between 2006 and 2023 were reviewed, with the medical records. Each patients' age, main disease, purpose of transportation, evacuation distance, and use of mechanical ventilators or extracorporeal membrane oxygenation (ECMO) were examined.

Results: The average age was 2.0 ± 3.9 (0–13) years for children and 50.2 ± 17.8 (22–99) years for adults. The most prevalent disease was cardiomyopathy (15 children and four adults (83.3% vs. 30.8%, respectively; p<0.001), followed by heart failure (HF) zero children and seven adults (0% vs. 53.8%, respectively; p<0.001). The reason for transport was placement of a ventricular assist device (VAD) in 16 children and 11 adults (88.9% vs. 84.6%, respectively; p=0.13). The evacuate distance was 447.2 ± 232.0 miles in children and 358.5 ± 201.3 miles in adults (p=0.97), of whom three children and one adult traveled more than 600 miles. Thirteen children and nine adults (72.2% vs. 69.2%, respectively; p=0.15) were fitted with a ventilator, of whom six children and six adults (46.1% vs. 66.7%, respectively; p=0.021) were placed on ECMO.

Conclusion: In cases of severe CVD transported by AMES, the most prevalent CVDs were cardiomyopathy and HF in children and adults, respectively. More adults than children were placed on ECMO. The majority of adults and children with CVD were transported for the installation of VAD.

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The Importance of High Sea Evacuation by the Japan Self-Defense Force in Preserving Safety and Freedom in the West Pacific Ocean

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Introduction: The vastness of the Pacific Ocean stretches out to the east and south of Japan. If a ship crew at high sea suddenly experiences trauma or illness, transporting them to appropriate medical facilities poses significant challenges compared to on-land situations. In these contexts, research and analysis by the Japan Self-Defense Force (SDF) on evacuation activities from the high seas provide useful information to international personnel engaging in sea rescue and research.

Methods: Documents published by the Ministry of Defense and Marine Rescue Japan Team were utilized. Cases from 2019 to 2023 were examined in terms of age, gender, nationality, and disease classification.

Results: The Japan Coast Guard (JCG) is responsible for command and control in the area of Japan. Furthermore, as requested by the chief officer of the JCG regional branch, the SDF helps with high-sea evacuations. A total of 55 cases were referred to the SDF by the JCG. Among these, 35 (64%) were evacuated by the Japan Maritime SDF, and 20 (36%) by the Japan Air SDF. In 11 cases, long-distance evacuation was conducted more than 500 miles away from land using new aircraft capable of landing on the sea surface. All cases of Japan Air SDF evacuations used search-and-rescue helicopters. Documents confirm that in 29 cases, most evacuees were male, aged 50–59, followed by ages 30–39 and 40–49. Trauma or neurovascular disease was the most common cause, followed by acute abdominal issues. All 29 cases were attended by civil medical staff.

Conclusion: To complete evacuation missions from the high seas, cooperation between civil medical facilities and JCG or

SDF officials is crucial. This system must be essential to maintain maritime security, including evacuations for safety and freedom of the seas.

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Management of Opioid Overdose by Ambulance Services 2018-2024 in Tallinn, Estonia

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Introduction: Tallinn Emergency Medical Service is the public ambulance service for the densely populated region of 500,000. Treatment protocols for ambulance guide the use of naloxone in opioid overdose with appropriate monitoring. However, the exact number of used doses, time at dispatch, and disposition after treatment is not proven.
Methods: The electronic database of Tallinn Emergency Medical Service was analyzed for two periods. 2018-2019 (1st period) and in 2023-2024 (2nd period). In 2028-2019, the main overdose substance was fentanyl. In 2023 -2024, in addition to common street drugs, nitazene was introduced. All ambulance dispatches for "possible overdose" and dispatches for diagnosed opioid overdoses were analyzed. All cases for opioid overdose were analyzed for several naloxone doses, time on dispatch, time onsite, and disposition after treatment.
Results: In general, during the 1st period, all street drug overdose-related visits comprised 0.22-0.43% of all ambulance visits, and opioids constituted 23-28% (51-91 dispatches annually) of all street drug-related visits. During the 2nd period, the corresponding numbers were 0.67-0.75 and 41-44% (221-295 annually). The frequency of hospitalization was 14.7-19.6% during both periods. The mean time onsite was similar during the two periods for patients treated onsite, 21.5-26.2 minutes. The mean on-scene time for patients who needed hospitalization was 52,7-67,2 minutes. The analysis of 2023 data showed that after 40 minutes on-scene, 65.4% of patients were hospitalized, and after 60 minutes, 95%. Hospitalization rate after naloxone doses was similar during both periods. Hospitalization rates were 4.9% after one dose of naloxone, 18.3% after the second dose, 32.5% after the third dose, and 30% after the fourth dose.
Conclusion: The number of ambulance dispatches due to drug overdose has increased significantly during the second period. The use and efficacy of naloxone have not changed during the two periods. Time at the scene for more than 40 minutes translates into a need for hospitalization.

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Where Oxygen Fades: Assessing Efficacy of a Portable Hyperbaric Mask for High-Altitude Hypoxia, a Pilot Crossover Trial

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Introduction: The incidence and severity of acute mountain sickness (AMS) escalate with altitude. If left untreated, AMS can progress to high-altitude pulmonary edema (HAPE) or high-altitude cerebral edema (HACE), both potentially fatal. The most effective treatment involves rapid descent to lower altitudes with increased oxygen availability. Portable hyperbaric bags have traditionally been used to simulate a lower altitude environment; however, their bulk and weight restrict usability. This study aims to evaluate the efficacy of a novel portable hyperbaric mask, which is lighter, compact, and allows simultaneous access to the patient's vascular system and mobility during use. The primary endpoint is the change in oxygen saturation before, during, and after mask use at high altitude. Secondary endpoints include subjective respiratory distress and AMS symptoms.
Methods: This pilot prospective self-controlled, intervention-focused crossover trial, conducted in two phases, will evaluate a novel 3D-printed portable hyperbaric mask in healthy volunteers. Phase 1 will take place at Rifugio Torino in the Italian Alps (3375m). Baseline measures for oxygen saturation, subjective respiratory distress, and AMS symptoms, assessed by the Lake Louise Score, will be recorded for each participant before mask application. These parameters will be reassessed at intervals during mask application and after removal. Phase 2 will replicate the procedure at higher altitudes, first at Aconcagua Base Camp (4200m) and later at the summit (6960m). Data collection is scheduled between December 2024 and February 2025.
Results: We anticipate observing notable variations in oxygen saturation, subjective respiratory distress, and AMS symptoms, correlating with mask use at various altitudes.

Conclusion: This study aims to assess the portable hyperbaric mask's effectiveness in alleviating AMS symptoms and potentially preventing HAPE and HACE.

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Essential Prolonged Casualty Care (PCC) Training for Non-Surgical Clinicians: An 8-Hour Intensive Course Design and Competency Evaluation in Austere and Resource-Limited Scenarios

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Introduction: Prolonged Casualty Care (PCC) addresses the need for extended patient care in military and disaster medicine, where resources are limited, and evacuations are delayed. Clinicians without surgical or critical care backgrounds often lack the training to provide prolonged care in such environments. This report presents a preliminary evaluation of an 8-hour PCC course specifically designed to equip non-critical care clinicians with essential skills for prolonged casualty management under austere conditions.
Methods: The PCC course is currently in the planning phase, focusing on developing 10 core competencies essential for prolonged casualty care, including patient assessment, documentation, decision-making, and treatment. The curriculum will incorporate skill stations and time-compressed simulation scenarios to provide participants with hands-on practice. Pre and post-course assessments are planned to evaluate participants' knowledge and skill acquisition once the course is implemented.
Results: Expected outcomes include improved knowledge and skills in prolonged casualty care among participants, particularly in handling patient care under resource constraints. We anticipate that participants will gain confidence and practical skills through the structured training and scenario-based exercises. Feedback will be gathered to refine the curriculum based on participant experiences and suggestions.
Conclusion: Although still in the planning phase, the 8-hour PCC course is designed to fill a critical gap in prolonged casualty care training for non-critical care clinicians. By emphasizing core skills for resource-limited settings, this course aims to improve clinical preparedness for disaster and conflict scenarios. Future research will be conducted to assess the course's effectiveness upon implementation.

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The Schoten Bus Accident: An Evaluation

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Summary: On April 10, 2022, a touring car crashed on the highway and rolled over. Two passengers died on the scene. There were five U1 patients, mainly with traumatic amputations, two of them in profound shock. Five were U2 and thirteen were U3, and six were uninjured. The dispatch activated the disaster plan, and within eight minutes, responders were sent out. Although the location wasn't clear and a traffic jam blocked the highway, the first medical teams arrived on the scene after 17.5 minutes. Within 20 minutes, three medical teams and five ambulances were on scene. Seven medical teams, six "112" ambulances, and nine Red Cross ambulances were deployed. One helicopter from another province was activated due to traffic problems. The Red Cross also activated support teams and a command-communication vehicle. The fire department applied tourniquets and passers-by, saving the lives of amputees. Patients were spread over nine hospitals, and because of severe, life-threatening lesions, the T1 patients were evacuated by the scoop and run system. Prominent was a lack of experience and limited disaster management education. Previous drill participation offered confidence. The victims' multinationalism caused problems in communication and identification. Several medical teams had extra physicians on board, as the initial alarm was suggestive of many (seriously) injured patients, facilitating the scoop-and-run procedure. The helicopter was used for the patient in the most profound shock, although the estimated time of arrival wasn't clear. Debriefing revealed the serious impact on the teams, stressing the importance of post-exposure support.

The communication with the bus firm was difficult, so it wasn't possible to obtain a passenger list. Although a SITREP is important, it was hard to get. The victims' multinationalism needed communication with the respective embassies without fixed procedures. Return to normal action was fast, but with little chance to relax and cope.

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Impact of COVID-19 Pandemic on the Mortality of Emergency Medical Services Transported Traumatic Brain Injury

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Introduction: Traumatic brain injury (TBI) is a major global health burden and the leading cause of injury-related death and disability worldwide. In March 2020, the World Health Organization (WHO) declared the novel coronavirus disease 2019 (COVID-19) a global pandemic. The purpose of this study was to investigate the effects of the COVID-19 pandemic on the mortality of TBI patients transported by emergency medical services (EMS).
Methods: Adult TBI patients who were assessed and transported by EMS between January 2018 and December 2021 were analyzed. The main exposure was the COVID-19 pandemic period at the time of the event. The primary outcome

was in-hospital mortality, and the secondary outcome was disability measured using the Glasgow Outcome Scale (GOS), one to three. Multivariable logistic regression analyses were conducted to calculate adjusted odds ratios (aOR) with 95% confidence intervals (95% CIs).

Results: A total of 18,988 patients were enrolled for analysis. In-hospital mortality in the COVID-19 era group was 1,812(20.9%), and the non-COVID-19 era group was 2,040 (19.8%). Multivariable logistic regression analysis demonstrated a significantly higher probability of in-hospital mortality in the COVID era group: aOR (95% CIs) 1.11 (1.03-1.20) for the COVID era group. There is no significant difference in disability: aOR (95% CIs) 1.01(0.95-1.08) for the COVID era group.

Conclusion: For the TBI patients assessed and transported by EMS in South Korea, subjects transported in the COVID-19 era were more likely to have higher in-hospital mortality compared to non-COVID-19 era. It should be considered when planning and implementing EMS protocols and community healthcare strategies during pandemics.

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Experience of the Terrorist Attacks in Brussels and the Management of the Wounded and War Wounds

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Summary: On March 22, 2016, the capital of Europe was hit by two terrorist attacks. As terrorism becomes more and more violent, we must learn and share our experiences to enhance our effectiveness in saving lives. The first attack hit the departure hall of the airport, which, due to its strategic role, relies upon a dedicated emergency plan. However, it focuses on airplane crashes and not on explosions in a crowded terminal. The second attack hit the subway at rush hour. An attack in such a confined environment is particularly challenging for the rescue teams as injuries are worsened, access is hindered, and numerous exits. Eleven medical teams were sent to perform triage and provide vital care. Two disaster response teams organized the medical response. Advanced Medical Posts were set up, and the mass casualty plan of all hospitals was activated. Managing war injuries for civilian teams was challenging. On-site care consisted essentially of prehospital damage control and burn care to ensure rapid evacuations for hemostatic surgery. 313 victims were dispatched to thirty hospitals. Another challenge was safety. Several threats were brought, and explosives were found on both sites. Lessons from Paris prompted a review of our multiple-site emergency plan. One single way of communication was used, and the evacuations were managed centrally. Finally, the key factor that helped limit the number of casualties was the acquaintanceship between emergency workers and non-medical teams built during exercises, allowing them to adapt and blend in as one team. Lessons from previous attacks were crucial to improving our management of the medical response. These should be shared widely, as another attack may always occur anywhere and at any time.

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Emergency Department Preparedness During a Major Asymmetric Attack: Lessons from a Hospital in Southern Israel During the October 7, 2023, Massacre

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Introduction: The October 7, 2023, massacre in Israel was a large, multi-site asymmetric attack with characteristics of both a very large terrorist attack and a conventional armed invasion, where Israel temporarily lost territorial control. Thus, it is a unique event in a Western democracy. Assuta Ashdod is a Level 2 trauma center located 26km from the Gaza Strip, which received 114 patients on October 7th, during which it activated its Mass Casualty Protocol (MCP). This study aimed to explore the experiences of staff working in this environment to inform hospital preparedness efforts in Israel and globally.
Methods: A purposeful sample of 18 key staff, including physicians, nurses, security, and orderlies, underwent semi-structured interviews. These were recorded, transcribed, and processed using thematic analysis methodology.
Results: The participants felt well prepared for this event because of recurring, frequent, and immersive MCP drills that had preceded it. Participants mentioned entering a state of mind where they worked mechanically without reflecting on the event itself. The hospital being structurally protected from rocket attacks allowed participants to concentrate on the work without fear of injury. Assuta Ashdod is a relatively small hospital where staff know each other well, and this was recognized as allowing for flexibility and effective communication. Obstacles included a shortage of secretaries for the correct registration and tracing of patients. While paper-based patient files are used during MCP drills, the lack of familiarity with interacting with these during regular work resulted in suboptimal documentation. Some clinicians mentioned a lack of situational awareness as they worked in isolation in a single part of the system throughout MCP activation.
Conclusion: This study has offered insights from staff with practical experience from MCP activation in a major asymmetric attack and has identified several organizational and resilience-related aspects that may inform preparedness efforts in the future.

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Rising from the Storm: Effective Hurricane Preparedness Strategies Implemented at Hospitals in New Orleans

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Summary: As climate change brings more rapid intensification, severity, and frequency of hurricanes, it is critical to look to lessons learned from the past to increase healthcare resiliency for the future. Twenty years ago, New Orleans lay devastated from Hurricane Katrina. Since the storm, it has rebuilt a healthcare system that is structurally and operationally fortified and has been put to the test multiple times in recent years. This presentation describes changes made to infrastructure, planning, staffing, communications, supplies, logistics, and patient tracking at a vital New Orleans hospital that enable the facility to remain functional and self-sufficient through major hurricanes and their aftermath.

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From Planning to Practice: Collaborative Strategies for Mass Casualty Incident Preparedness in Hospitals

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Summary: As mass shootings and terrorist threats continue to rise, Mass Casualty Incident (MCI) planning has become critical for hospitals. However, there is often a chasm between the planning and implementation phases of MCI preparedness. To be successful, an MCI plan needs to be functional for and familiar to the clinical and ancillary staff who must use it. Involving these individuals in the planning and training processes is key to creating an MCI plan that works on paper and in practice. This presentation discusses strategies for creating an MCI plan and training schedule for Emergency Departments and hospitals. It shares ideas for creating planning teams, explains key concepts for MCI planning in the healthcare setting, and shares templates that can be tailored to the needs of other facilities interested in creating or modifying their plans. It also shares lessons learned by the presenters and encourages an exchange of ideas, challenges, and successes in MCI planning amongst participants.

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Comprehensive Analysis of Millenium Disasters in South Korea from 2000 to 2024

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Introduction: The 21st century has seen numerous natural and technological disasters globally, significantly impacting nations both socio-economically and environmentally. South Korea, with its unique geographical and socio-economic landscape, has experienced a wide range of significant disasters. This study aims to provide a comprehensive analysis of these disasters, focusing on disaster frequency, types, and impacts.
Methods: Data from EMDAT, an international disaster database, were utilized to categorize and analyze disasters in South Korea from 2000 to 2024. Key variables included disaster type, total deaths, total economic damage, and the number of affected people. Statistical analyses involved descriptive analysis, correlation analysis, and simple linear regression with visualization. Regression analyses explored relationships between total deaths and the independent variables: Location, Disaster Group, and Disaster Type.
Results: A total of 97 disaster events were recorded, with natural disasters accounting for 67.01%. Technological disasters caused more fatalities (1,495, 55%) compared to natural disasters (1,223, 45%). The annual distribution showed a higher occurrence of natural disasters than technological disasters since 2019. Storms were the most frequent (31 events, 31.96%) and destructive disaster type, causing the highest economic damage (13.62 billion USD) and fatalities (601 deaths, 22.11%). Regression models revealed R-squared values of 0.98, 0.23, and 0.34 for Location, Disaster Group, and Disaster Type, respectively. Kyongsangbuk-do experienced the highest number of disasters (66 events), resulting in 2,179 fatalities and an economic loss of 14.51 billion USD. Storms and miscellaneous fires were the most lethal, while gas leaks caused the most injuries (3,178).
Conclusion: This analysis underscores the need for continued investment in disaster preparedness and mitigation in South Korea. The increasing severity and frequency of disasters necessitate adaptive measures to protect vulnerable communities and economic assets. The findings advocate for enhanced policy frameworks and technological innovations to bolster resilience against future disasters, ensuring sustainable development and safety for South Korean society.

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Perceptions of Threat and Public Response: Shaping Emergency Management Strategies During Prolonged Crises

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Introduction: The concept of 'perceived threats' in the context of various emergencies captures how populations experience and interpret actual and potential risks. Understanding public perceptions of diverse threats during and after these crises is critical for numerous reasons, from influencing public health behaviors to enhancing community trust and resilience.
Methods: The study assessed the Israeli population's perceptions of varied threats during three types of adversities – the COVID-19 pandemic, a socio-political crisis triggered by a judicial reform process, and a protracted war. Data were collected through internet panels, targeting a representative sample of the Hebrew-speaking Israeli population. Four main risks were surveyed: health, economic, security, and political threats. The findings were analyzed to identify commonalities and diversities in risk perceptions during the different adversities.
Results: The findings present that political instability was the highest perceived risk throughout the COVID-19 pandemic and the socio-political crisis. Furthermore, the political threat was ranked close to security during the protracted "Iron Swords" war. After 11 months of conflict, the public perceived the political risk as the most severe when ranking the four types of risks.
Conclusion: Misalignments between governmental strategies and the public's risk perceptions can lead to ineffective emergency management. For example, during the COVID-19 pandemic, while government officials focused on the fear of the virus, the public's concerns centered on political instability. This misalignment resulted in a lower uptake of repeated vaccinations. The study underscores the necessity of understanding

public perceptions to tailor emergency responses that are socially sensitive and practically feasible. Enhanced comprehension of these dynamics is pivotal for current and future public health strategies and the overall endurance and recovery of societies from prolonged emergencies.

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Clarifying and Proposing Solutions for Systemic Challenges in the Definition and Reporting of Indirect Disaster-Related Deaths in Japan

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Introduction: Disaster risk reduction significantly reduced direct disaster-related deaths, but indirect deaths are becoming a significant issue after recent disasters in Japan, an aging society. Some of these deaths were officially certified for condolence grants to bereaved families who applied, which may hinder the accuracy of mortality statistics. This study aimed to investigate the extent to which official medical certificates documenting disaster relevance were included in the municipal documents for indirect disaster-related deaths.
Methods: This study conducted a retrospective cross-sectional analysis using anonymized data obtained from municipalities through information disclosure (IRB approval: 2023-1-489). The study assessed 755 certified indirect disaster-related deaths after the 2011 Great East Japan Earthquake in the Miyagi Prefecture, Japan, to determine whether the medical documents in the certification included references to disaster relevance.
Results: Of the 755 cases, 74 (9.8%) death certificates and 145 (19.2%) medical documents mentioned disaster relevance. In 536 (71.0%) cases, the disaster relevance was only mentioned in the self-reported documents submitted by bereaved families. The median [interquartile range] time from the disaster onset to disaster-related death was 21 days [7–52 days]. The deaths occurred 61.1% within 30 days, 34.0% during 31-180 days, and 4.5% after 181 days. The mean age of the deceased was 79.7 years, with no gender difference. The predominant etiologies of these deaths included circulatory (32.7%) and respiratory (27.7%) diseases.
Conclusion: Only 30% of official medical documents mentioned disaster relevance in 755 certified cases as indirect disaster-related deaths, suggesting the lack of systematic registration of disaster relevance. Especially, middle and long-term disaster-related deaths can be marginalized. After establishing social consensus, changing the medical practice and municipal handling of death certification for disaster-affected people is essential for accurate disaster mortality statistics.

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Social Return on Investment in Disaster Management: A Scoping Review and Health-Perspective Analysis

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Introduction: Clarifying the return on investment in disaster management is vitally important for quantifying its value, attracting funding, policy deployment, and eventually promoting this field. The study aimed to consolidate evidence of social return on investment in natural disaster management and to incorporate insights from health perspectives to figure out future directions.
Methods: A scoping review was conducted following the PRISMA guidelines, using databases including PubMed and Web of Science. The search strategy employed keywords related to disaster management and cost-benefit analysis. The exclusion criteria encompassed non-English language publications, man-made disasters, and studies in which costs and benefits were not quantified in monetary value.
Results: A literature search was conducted on August 15, 2024, and resulted in identifying 972 documents, of which 46 were selected for further analysis. Additionally, 56 grey literatures were identified, with 14 adopted. A total of 220 disaster management interventions were found, addressing various disasters such as floods, typhoons, and earthquakes. The interventions included hard infrastructure measures, warning systems, and green infrastructure development, encompassing pond maintenance and afforestation. The benefits primarily consisted of the estimated damage that could be avoided. The benefit-cost ratios distributed from approximately zero to over 2000, with a median of 2.30 and quartiles of 1.07 and 5.00. Approximately half of the literature assessed the value of human life by converting the number of deaths into monetary values. The impact on health as a benefit is infrequently taken into account.
Conclusion: The benefit-cost ratios of disaster management are generally high and sometimes very high, with three-quarters exceeding 1 and one-quarter exceeding 5. Furthermore, these benefits are likely underestimated, as the impacts on health are rarely measured. When assessing social return on investment in disaster management, it is considered mandatory to take health into account.

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Developing a Methodology and Basic Practical Application to Identify the Causative Agent Based on Symptoms in the Event of a Chemical Accident or Disaster Where the Agent Is Unknown

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Introduction: Chemical disasters occur continuously around the world, but it is not easy to respond quickly when the causative substance is unknown. It is possible to estimate the substance through information, documents, and labeling, but it is limited to chemical accidents within the company or in vehicles that are labeled with substance information, so it is difficult to identify substance information in real time in chemical terrorism, illegal chemical production, and chemical warfare. Therefore, this study investigated systems that estimate chemical substances based on symptoms and applied representative substances in practice.
Methods: In this study, the international status and development of symptom-based chemical accident causative agent estimation systems that can be analyzed were investigated through the literature and internet searches. After analyzing 400 chemical accidents for five years through the Comprehensive Chemical Information System, eight substances were selected after excluding duplicate chemicals. Symptoms of exposure to these eight substances were analyzed through WISER.
Results: Representative systems include Chemical Companion and Toxicology Information Center, and WISER was ahead in providing probabilistic estimates of chemicals through symptoms. Estimation through artificial intelligence was under research and not applied in practice. Symptom analysis of exposure through WISER can be summarized into 17 typical symptoms.
Conclusion: As there are existing contents such as emergency medical information databases and response scenarios for symptoms and medical consequences of chemical accidents, it is expected that the foundation of the causative agent estimation system can be secured by utilizing existing contents and technologies such as artificial intelligence in the future.

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Research and Development of Intelligent Auxiliary Diagnostic System for Rhabdomyolysis Based on Machine Learning

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Introduction: Crush syndrome, also known as traumatic rhabdomyolysis, often occurs in disasters like earthquakes, traffic accidents, and building collapses. It results in muscle cell necrosis, leading to symptoms such as hypovolemic shock, hyperkalemia, and acute kidney injury (AKI). The mortality rate of rhabdomyolysis is about 10%. An intelligent auxiliary diagnostic system for rhabdomyolysis based on machine learning is crucial.
Methods: This study aimed to develop an intelligent auxiliary diagnostic system, utilizing the MIMIC-III database and electronic medical records from several Chinese hospitals. The system was trained and validated with 70% and 30% of patient data, respectively. A variety of machine learning methods were used to establish injury grading and prognosis assessment models, and statistical methods and feature importance assessment methods were used to analyze and explain the features selected by the model.
Results: The 22 clinical indicators originally included in the modeling were reduced to 11 through feature analysis and feature screening. In internal tests, the auxiliary diagnostic system based on 11 parameters achieved an average accuracy of 0.89. External validation with 360 cases showed an average accuracy of 0.84, with an AKI prediction accuracy of 0.83 and an AUC value of 0.82. Death risk prediction accuracy reached 0.89.
Conclusion: This intelligent auxiliary diagnostic system provides valuable recommendations for the diagnosis and treatment of rhabdomyolysis, improving treatment success rates and optimizing medical resource allocation in disaster situations. By leveraging machine learning, we have established a robust and reliable tool to assist healthcare providers in managing this complex condition.

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Rapid Monitoring of the Impact of Pandemic on the Healthcare System: Achievements and Implications

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Introduction: During a pandemic, it is essential to have timely and effective responses to rapidly monitor its impact on the healthcare system. The system of data collection, analysis, and feedback was reconstructed for this purpose.
Methods: To rapidly measure the COVID-19 impact, a subproject was launched early in 2020 as part of the Quality Indicator/Improvement Project (QIP), to which over 500 hospitals were voluntarily registered from across the nation. In normal times, the anonymous individual-level data of all the patients of participating hospitals were routinely collected and securely stored in the QIP database securely managed. Under the COVID-19 pandemic, QIP was converted into an emergency mode, which enabled a more rapid assessment of the healthcare system. Statistical methods used included interrupted time-series analysis adjusted for seasonality and time trends.
Results: During the pandemic, inpatient visits were reduced in almost all areas, including stroke, myocardial infarction, heart failure, pneumonia, insufficiency fractures, and even cancer surgeries, except for alcohol-induced diseases. Furthermore, the number of inpatients and outpatients did not recover even after the pandemic was over, which showed an increasingly difficult

environment for healthcare management. Hospital reimbursement income dropped dramatically, by as much as 30% in the first half of the year compared to the previous year, particularly in hospitals that treated more COVID-19 inpatients. This alerted an urgent need for subsidies to sustain the healthcare system. Evidence suggested that the quality of care was maintained in medical and surgical fields such as acute myocardial infarction and insufficiency fractures, even under a stressful working environment during the pandemic.

Conclusion: The system developed in this project demonstrated a prototype that could potentially be implemented at the national level to rapidly monitor the impacts of pandemics on healthcare systems, enabling policymakers and healthcare administrators to respond more effectively and timely.

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Single Contaminated Patient Management - A Case Report

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Summary: The management of chemically contaminated patients poses a formidable challenge to the emergency department, necessitating a complex approach to patient care. While the standard emergency medicine training predominantly focuses on clinical topics, the emergence of chemically contaminated cases mandates a comprehensive understanding of management aspects such as suspicion in exposure contexts, decontamination procedures, prevention of personnel contamination, and tailored treatment modalities.

In August 2024, a 59-year-old patient was admitted to the Emergency Department (ED) after a workplace accident involving a traumatic impact with a solid object. Upon arrival, the patient was conscious, hemodynamic, and respiratory stable, having as main complaints sudden blindness and pain in the right lower limb, revealing an open fracture of the tibial plateau. A rapid medical history elucidated that the patient had been subjected to exposure from an unidentified container of acid, an incident undisclosed by the pre-hospital team. After a thorough patient history was obtained, the individual was triaged as chemically contaminated, with the contaminant identified as a mix of nitric and hydrofluoric acid. The patient was promptly isolated, decontaminated, intubated, and provided with provisional fracture fixation.

This case aligns with existing literature, as most chemically contaminated patients arriving in EDs are exposed due to occupational or accidental household incidents. However, most hazardous materials (HAZMAT) hospital protocols are designed for mass casualty contamination events, requiring extensive human, material, and structural resources. They are often excessive when handling these single-patient cases. The complexity of these protocols makes them hard to use and not practical in overcrowded EDs. Therefore, developing and implementing user-friendly protocols for managing individual HAZMAT patients in the ED would be beneficial. Additionally, regular training should be provided not only for emergency medicine personnel but also for the connecting specialties dealing with these patients, including anesthesiology, surgery, gastroenterology, or ophthalmology.

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Establishment and Evaluation of Crush Injury Models in Large Animals with Varying Degrees of Severity

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Introduction: Crush injury is a type of tissue damage caused by external pressure on a part of the body, commonly seen in natural disasters, traffic accidents, and other scenarios. The severity of the injury is closely linked to patient prognosis, making the establishment of appropriate animal models crucial for crush injury research.

Methods: Bama miniature pigs were randomly assigned to three groups, subjected to a 10-fold body weight pressure on the hindlimb muscles. The duration of compression was controlled to simulate mild, moderate, and severe crush injuries. Ultrasound imaging assessments were performed before compression and at 0, 4, 24, and 72 hours post-decompression. Blood samples were collected at each time point for biochemical analysis. At the study's conclusion, muscle tissue from the compressed areas was collected for histopathology.

Results: Ultrasound imaging showed that in the mild group, muscle echogenicity was slightly increased with mild structural disruption; in the moderate group, echogenicity was enhanced, with ground-glass changes; in the severe group, muscle echogenicity was chaotic, with a mesh-like hypoechoic pattern and edema in the fat layer. Biochemical analysis revealed a trend of initial elevation followed by a decline in CK, CK-MB, and potassium (K) levels within groups. Intergroup comparison showed a progressive increase in these markers with the severity of injury, especially in the severe injury group, which exhibited the highest levels. Histopathological analysis showed widespread muscle necrosis, vascular rupture, and inflammatory cell infiltration in the severe injury group, while mild and moderate

groups primarily exhibited cellular edema and localized inflammation.

Conclusion: This study successfully established a Bama miniature pig model of crush injury with varying severity, and the model's validity was confirmed through imaging, biochemical, and histopathological evaluations. These findings provide a valuable experimental foundation for further research into clinical diagnosis, prognostic assessment, and therapeutic strategies for crush injuries.

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Need for Health Management Strategies for the Nankai Megathrust Earthquake-Triggered Industrial Accidents

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Introduction: The Nankai megathrust earthquake occurs in the Nankai trough, an oceanic trench that runs along the Pacific coast of Japan and recurs in Japan approximately every 100 to 150 years. The last Nankai megathrust earthquake was in the 1940s. Since then, many industrial plants have been built in Japan. The next Nankai megathrust earthquake will be the first time these plants on the Pacific coast face a colossal earthquake. In the Great East Japan Earthquake of 2011, fires broke out at oil refineries, causing health problems. The Fukushima Daiichi nuclear power plant accident resulted in prolonged evacuations and increased disaster-related deaths. Although technological measures such as anti-seismic reinforcement and seawall construction are being taken against earthquakes, management plans for injuries and physical and mental illnesses associated with industrial accidents may still need to be developed. Disaster risk reduction (DRR) plays a vital role in ensuring the security of disaster victims. This abstract aims to review existing DRR strategies in safety and health management for major plant incidents possibly triggered by the Nankai megathrust earthquake, according to the Sendai Framework. The Sendai Framework provides comprehensive priority themes in DRR.

Methods: A literature review was conducted by searching available published literature from online databases. The information used in this review is taken from articles, journals, and government reports regarding the topic from November 2014 to October 2024.

Results: This review revealed that DRR strategies for major plant incidents possibly triggered by the Nankai megathrust earthquake lack areas related to health management compared to safety management in four priorities in the Sendai Framework.

Conclusion: It was suggested that DRR strategies for industrial accidents caused by the Nankai megathrust earthquake focus on engineering aspects. However, these strategies should also include health management for earthquake-triggered industrial accidents.

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Showing the Way, Chemical Spill from Train Derailment, Exposure Analysis by GIS, East Palestine, Ohio, USA

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Introduction: On February 3, 2023, a freight train containing 149 train cars operated by Norfolk Southern Railway derailed in East Palestine, Ohio. Eleven of the derailed cars contained hazardous chemicals, including vinyl chloride, ethylene glycol monobutyl ether acetate, 2-ethylhexyl acrylate, isobutylene, n-butyl acrylate, and benzene residue. The Ohio Regional Poison Control Centers received calls from the community and health care providers affected by this incident. On February 6, railroad officials decided to perform a controlled burn with the train cars carrying 115,580 gallons of vinyl chloride due to the rising temperatures, which posed an explosion hazard.

Methods: Retrospective case narrative reviews were performed on the phone calls received from the affected community to the Cincinnati Drug and Poison Information Center (DPIC). The cases started in February 2023 and ended in October 2024. Data included the caller location and clinical effects/symptoms from the initial chemical spill, and the controlled burn was entered into a Geographic Information System (GIS).

Results: 179 cases were reviewed, with the most common clinical effects/symptoms. The cases were included based on their distance from the derailment, < 1 mile, 5 miles, 20 miles, and > 20 miles radius.

Conclusion: Understanding the health effects of chemical spills in a technological disaster will inform the creation of emergency and disaster management protocols for hospitals and first responders.

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Identification of Neurobehavioral Symptoms After the Al Asad, Iraq, Theatre Ballistic Missile Attack of 2020

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Introduction: On January 8, 2020, Al Asad Air Base was attacked with more than 12 Theatre Ballistic Missiles from Iran. To date, this is the largest ballistic missile attack on American service members. Soldiers began to report post-concussive symptoms and sleep changes. The goal of this study is to characterize neurobehavioral symptoms among these soldiers.
Methods: A survey performed 4-6 weeks after the attack assessed blast exposure, neurobehavioral symptom inventory (NSI), and sleep habits before and after the event. A latent class analysis (LCA) informed by the presence of the most common persistent NSI symptoms was executed. The resultant profiles assessed the soldier's location, and if on the base distance to the missile strikes and self-reported sleep duration.
Results: In total, 593 service members and contractors completed the survey; 85% were 40 years of age or younger. The LCA identified three distinct classes: 'Minimally Affected' (60.5%), 'Moderately Affected' (28.8%), and 'Profoundly Affected' (10.7%). Overall, the most commonly reported persistent symptoms were 'difficulty sleeping' (32.7%), 'feeling anxious' (25.7%), and 'headache' (22.3%). The Moderately and Profoundly Affected classes had substantially elevated probabilities of persistent neurobehavioral symptoms, significantly reduced sleep duration, and were more likely to be closer or more exposed to the missile strikes than those in the Minimally Affected class.
Conclusion: More than 80% of the soldiers reported some form of blast exposure. Three phenotypic classes characterized by increasing likelihood of persistent neurobehavioral symptoms were identified. Increased proximity to the missile strike was associated with a greater number and/or persistence of mental and physical symptom burden after the attack. Soldiers exposed to theatre ballistic missile attacks should be screened promptly and until symptom resolution.

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Acute Rheumatic Fever Following Natural Disasters Among First Nations Peoples in Australia, 2012-2021

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Introduction: This study investigated the impact of natural disasters on the incidence of acute rheumatic fever (ARF) among First Nations peoples in Australia, as reported from 2012 through 2021.
Methods: Records covering natural disasters in Australia from 2012 to 2021 were compiled from the Emergency Events Database (EM-DAT) and the Australian Disaster Mapper. ARF incidence rates among First Nations peoples in Australia were retrieved from the Australian Institute of Health and Welfare, expressed as an annual incidence rate per 100,000 population. Calculations of ANOVA, simple linear regression, and multiple linear regression were performed to compare the number of natural disasters and the type of natural disasters to the incidence of ARF.
Results: From 2017 to 2021, the annual incidence of ARF was significantly predicted by the number of natural disaster events in all five regions of Australia ($p < .05$), and even more strongly when excluding New South Wales ($p < .01$). From 2012 to 2021 using data excluding New South Wales, there was a weaker association between natural disaster events and ARF incidence ($p = .07$). When the natural disasters were further categorized into meteorological (including storms, floods, and cyclones) and climatological disasters (including fires, droughts, and heatwaves), a significant association was found between the type of disaster and ARF incidence from 2012 to 2021 ($p = .02$) and from 2017 to 2021 ($p = .01$). From 2012 to 2021, climatological disasters were a significant predictor with a negative correlation ($p < .01$). Conversely, from 2017 to 2021, meteorological disasters were the most significant predictor with a positive correlation ($p < .01$).
Conclusion: The incidence of meteorological disasters is associated with ARF among First Nations people in Australia. These findings introduce ARF as a disease of concern that disproportionately affects vulnerable populations in the wake of natural disasters.

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Large-Scale Combat Operations and Far Forward Damage Control Resuscitation: Observations from Ukraine

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Introduction: Large-Scale Combat Operations (LSCO) pose significant challenges to prehospital medical care, particularly in Damage Control Resuscitation (DCR). The conflict in Ukraine offers critical insights into these challenges, emphasizing the role of blood transfusion and Tactical Combat Casualty Care (TCCC) in modern warfare. This systematic review aims to analyze advancements and challenges in pre-hospital care during LSCO, focusing on the Ukrainian conflict. Key objectives include evaluating blood transfusion practices, limitations of current protocols, and the need for adaptive medical strategies.
Methods: This review involves a comprehensive analysis of military medical practices during LSCO. The study examines

the implementation of blood transfusion protocols, the use of Low Titre O Whole Blood (LTOWB), and the development of Clinical Practice Guidelines (CPGs) for DCR. Data and observations from various medical personnel and organizations involved in the Ukrainian conflict are utilized.
Results: The analysis highlights the essential role of blood transfusion in improving soldier survivability in modern warfare. It identifies significant limitations in the Walking Donor Program and underscores the importance of LTOWB. Innovative medical strategies adopted in Ukraine, such as the use of portable ultrasound devices and drones for blood delivery, demonstrate the adaptability required in LSCO environments. The study also emphasizes the need for improved training, equipment, standardization, and strategies to enhance medical readiness and combat effectiveness.
Conclusion: The findings underscore the need for a unified approach to blood transfusion protocols and the development of adaptable DCR strategies. Enhanced support and collaboration among NATO and partner states are crucial for expanding access to blood products and improving prehospital care in LSCO scenarios. The experiences from Ukraine offer valuable lessons for modernizing military medical care to reduce preventable morbidity and mortality.
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Antidote Response Network

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Introduction: The Antidote Response Network (ARN) strengthens local preparedness and response to a chemical incident by addressing local antidote availability, placement, mobilization, and rapid delivery from pharmacies to an incident area. The ARN comprises entities with antidotes (e.g., hospital pharmacies) and pushes their real-time inventory to be securely received, stored, and accessible by an honest broker (e.g., poison information center). When a chemical mass casualty incident requiring urgent antidote response occurs, the entity urgently needing an antidote notifies the honest broker, the honest broker alerts all ARN members of the need for antidote, and members mobilize and deploy the requested antidote. The honest broker coordinates antidote pick-up and delivery to the incident area, necessitating the development of technological platforms that can accommodate these requirements.
Methods: A secure web-based and smartphone platform was developed to receive and store automated real-time ARN pharmacy antidote inventory uploads that can be accessed by an honest broker and can notify ARN pharmacies of a chemical mass casualty incident requiring urgent antidote response.
Results: Pharmacy-based antidote inventories were successfully interfaced with a secured server, accessible by an honest broker as well as an operationalized smartphone platform that sends alerts to ARN members verified by the honest broker.
Conclusion: The ARN web-based and smartphone platform allows honest brokers rapid access to pharmacy antidote assets and locations, alerts ARN members of a chemical mass casualty incident requiring urgent antidote response as well and coordinates antidote pick up and delivery to the incident area of need.
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Flood Risk Reduction Using a Flood Vulnerability Index

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Introduction: Floods are among the most frequent and destructive disasters globally, posing significant threats to human life, infrastructure, cultural and environmental heritage, and economic activities. The impact of floods is expected to grow due to climate change, population growth, and economic factors. Effective flood risk management involves assessing three key components: the hazard, exposure, and vulnerability. While understanding of hazards and exposure has improved, the terminology and methodologies for assessing vulnerability remain in development.
Methods: This study focuses on evaluating the flood vulnerability level in municipalities of Mazovia Province, Poland, using a flood vulnerability index and open-access data. Research was conducted in municipalities identified as flood hazard areas (fluvial floods) with a 1% probability of occurrence.
Results: The total flood vulnerability index of municipalities showed that the municipality of Wyszków had the greatest vulnerability, which stems from its highest exposure indicator, its high lack of resilience level, and its low level of susceptibility. The proportion of individuals with non-Polish nationality is relatively low in this area. Additionally, the percentages of people living in hardship, older individuals, and women are moderate compared to other municipalities.
Conclusion: Municipalities, where vulnerability is mainly influenced by exposure, should implement spatial policies that limit land use within flood hazard areas. In areas where susceptibility significantly influences flood vulnerability, it is crucial to educate residents on how to protect themselves from flooding and to inform them about appropriate behaviors during a flood. Municipalities with low resilience should invest in the necessary manpower and equipment for effective rescue operations, facilitate a swift return to normalcy, and increase funding for civil protection efforts. Additionally, they should assess whether the number and availability of emergency services (such as firefighters) align with the population size and distribution.

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Optimizing Emergency Responses for Self-Evacuation in Flood-Prone Regions of Poland: A Traffic Modelling Approach

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Introduction: Floods rank among the most frequent and destructive natural disasters globally, presenting severe threats to human life, infrastructure, and economic stability. In Poland, existing flood risk management strategies often neglect the complexities of self-evacuation, particularly in areas with a 1% annual flood occurrence. This study seeks to fill this gap by evaluating the effectiveness of self-evacuation via private vehicles in flood-prone regions, aiming to enhance emergency response strategies and mitigate the adverse consequences of flooding.

Methods: A comprehensive four-step traffic modelling approach was applied to simulate self-evacuation in flood-prone regions. The model integrated national traffic flow data alongside responses from questionnaire surveys conducted among residents in flood-risk areas across Poland. By utilizing Geographic Information Systems (GIS) and traffic engineering tools, a high-resolution network model was developed, encompassing both main and local roads to provide an accurate assessment of traffic distribution. The analysis considered various scenarios, including pre-flood and during-flood conditions, with or without existing commuter traffic, and evacuation travel time thresholds of eight and 15 minutes to designated shelters.

Results: The analysis showed that evacuating before a flood is more effective than during the flood, as a larger portion of the population can reach safety within the set travel time limits. Evacuation routes were significantly hindered by limited road capacity, bottlenecks, and natural barriers, especially under active flood conditions. The model identified key sections of the road network at risk of congestion during evacuation and offered valuable insights into the efficiency of shelters at different time intervals.

Conclusion: Effective flood risk management in Poland requires integrating self-evacuation strategies with advanced traffic modelling. This study emphasizes proactive evacuation planning and stronger infrastructure resilience to reduce flood impacts. Key recommendations include optimizing evacuation routes and improving communication for timely evacuations.

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Declining Willingness to Work Under Radiation Exposure: An 8-Year Follow-up Study of Healthcare Workers Near a Nuclear Power Plant

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Introduction and Background: Healthcare facilities near nuclear power plants face potential staffing challenges during nuclear accidents due to radiation exposure risks. Four years after the Great East Japan Earthquake, in 2015, we surveyed hospital staff working 11km from a nuclear power plant. 90.8% of respondents indicated willingness to work within national radiation dose limits, and 36.4% were willing to work under conditions reaching 100 mSv cumulative exposure. We conducted a follow-up survey at the same hospital eight years later.

Methods: In January 2024, we surveyed staff at a hospital near a nuclear plant regarding their willingness to work under three cumulative radiation exposure levels: 1 mSv, the standard dose limit for radiation workers in Japan, and 100 mSv. The standard annual dose limit for male radiation workers is 50 mSv, while it is 5 mSv per three months for female workers. Respondents indicated whether they were willing, unwilling, or uncertain about working under each exposure level.

Results: The survey had a response rate of 90.2% (358 out of 397). Among respondents, 46.4% (n=166) were willing to work under 1 mSv exposure, 38.5% (n=138) under 50 mSv, and 28.5% (n=102) under 100 mSv. Compared to 2015, Chi-square tests indicated significantly lower acceptance rates across all exposure levels (χ^2=187.4, p<0.001).

Conclusion: Hospital staff near nuclear power plants are essential for patient care and evacuation during nuclear incidents. However, many staff members expressed reluctance to work, even at low exposure levels (1 mSv). Enhancing staff preparedness requires improved risk communication and organizational measures to protect staff from radiation exposure, ensuring an effective response in future nuclear disaster scenarios.

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Improvised Flotation "Uitemate" as a Last Resort: Lessons Learned from Elderly Survivors and Victims of the 2018 Japanese Flood Disaster

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Summary: The 2018 Western Japan floods resulted in numerous fatalities among elderly residents, with many cases of "drowning at home" reported. This study analyzes victim characteristics to explore mitigation strategies for a society experiencing increasing climate-related disasters. We collected cases of home drowning fatalities during the floods in Ehime and Okayama Prefectures through media reports (newspapers and television) and analyzed survival patterns. In Ehime Prefecture, 9 (29.1%) of 32 victims drowned, with 3 (9.7%) drowning at home. All three were over 70 and found on the first floor. In Okayama's Mabi town, 43 (84.3%) of 51 drowning victims died at home, with 36 (70.6%) being elderly (65+). 42 died on the first floor, one on the second floor. Both prefectures reported cases where surviving elderly residents reached the second floor but failed to convince their spouses to follow, resulting in spouse fatalities. In one case, an elderly couple survived by floating on their bed, which rose with the water level near the ceiling. In Ehime, a family successfully rescued a one-year-old girl and her great-grandmother using a two-seater sofa as flotation. Swimming while clothed is challenging, particularly for elderly individuals with reduced physical strength. Given that most elderly victims drowned on the first floor, the survival probability could increase through flotation strategies. When external evacuation risks are high during indoor flooding, back float and improvised flotation devices (life jackets, coolers, sealed backpacks with clothing) may contribute to survival. This survival technique, internationally known as "Uitemate" (Float and Wait), effectively prevents drowning in various flood disasters and represents a household-level disaster risk reduction strategy.

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Enhancing Prehospital Interagency Collaboration During Terrorist Incidents: Perspectives from European Focus Group Interviews

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Introduction: The escalation of conflicts in the Middle East has led to an increased risk of terrorism resurgence in Europe. During past terrorist incidents, inefficient interagency collaboration has repeatedly been identified as a key obstacle to an efficient response. This study aims to investigate the perspectives of European prehospital emergency medical providers and law enforcement officers on interagency collaboration during terrorist incidents. It seeks to identify barriers, best practices, and opportunities for enhancing collaboration.
Methods: Interdisciplinary, international focus group interviews have been conducted online (at time of submission: nine interviews, 45 participants,13 European countries). Each interview has been analyzed using deductive coding for predefined topics, e.g., Command, Communication, and Hot Zone Care. Inductive coding has been used for additional content arising from the discussions.
Results: The paucity of joint training opportunities and the need for political guidance were considered the most pressing issues. Interagency miscommunication, disparate situational awareness, and differing mindsets on the scene were identified to significantly impede provider safety on the scene. Within the national protocols of 73% (33/45) of participants, patient care inside the hot zone relied largely on police forces, including special forces. Concurrently, it has been emphasized that, due to a lack of resources, police forces are likely to focus not on patient care or evacuation but on threat elimination during the initial response phase. Additionally, evacuation resources have been identified as a bottleneck in transferring casualties from the hot zone to a safer zone. In summary, these factors create a therapeutic vacuum for casualties with potentially survivable injuries inside the hot zone.
Conclusion: This study pronounces the need for joint training opportunities, which are anticipated to increase provider safety. Further, it highlights the urgent necessity of political commitment to set a framework that enables providers to diminish the therapeutic vacuum inside the hot zone.

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Access to Care in Post-Conflict Settings: A Mixed-Methods Study Exploring Access to Care Trends, Barriers, and Changes after the Taliban Takeover in Afghanistan

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Introduction: The Taliban takeover in August 2021 put an end to over 40 years of conflict, albeit it resulted in the departure of several international organizations from the country and the freezing of assets, which unleashed economic and humanitarian

crises. Taking advantage of the reopening of previously restricted areas and the longstanding presence of Emergency in the country, this study sought to achieve a thorough understanding of access to care in Afghanistan by exploring trends, barriers, and changes after August 2021.

Methods: The project consisted of three phases: analysis of Emergency aggregated surgical, maternal, and pediatric data to explore healthcare utilization over the years; dissemination of a 67-item questionnaire to patients visiting Emergency facilities by trained local staff; and semi-structured interviews with local health professionals.

The result of a collaboration between Emergency and CRIMEDIM.

Results: Facilities' records from 11 provinces were analyzed, 1807 questionnaires were collected, and 43 interviews were conducted. Data revealed a drop in consultations in August 2021, but rates returned to normal as early as September 2021, with more patients seeking care for civilian trauma rather than war wounds. Although patients feel safer when visiting health facilities, their ability to pay for care has decreased after August 2021. Many health system-related factors impact access to care and make people go straight to larger hospitals, aggravating the congestion of patients in tertiary hospitals.

Conclusion: This study contributes to paving the way to Universal Health Coverage in Afghanistan. Although the country has a unique social, political, and economic context, these results can be generalized to other postcolonial settings.

Full authorship: Martina Valente, Alessandro Lamberti-Castronuovo, Francesca Bocchini, Monica Trentin, Yasir Shafiq, Michela Paschetto, Ghulam Ali Bahdori, Jan Agha Khadem, Mirza Sayed Nadeem, Mohammand Hanif Patmal, Mohammad Tawoos Alizai, Francesco Barone-Adesi, Rossella Miccio, Luca Ragazzoni.

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Epidemiology of Patients with Acute Conflict-Related Extremity Injuries Sustained in Syria and Iraq: An Observational Study from Two Civilian Trauma Hospitals

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Introduction: In 2023, conflict-related injuries resulted in 172 thousand fatalities. A majority of those killed and injured in armed conflicts are civilians. The most common anatomical site of conflict-related injury for civilians is the extremities. There is a need for increased knowledge on the epidemiology of civilian casualties. This study aims to describe the epidemiology of a population treated for conflict-related extremity injuries at civilian hospitals.

Methods: Data were derived from a pragmatic randomized controlled trial performed at two civilian trauma hospitals in Iraq and Jordan with patients injured in Iraq or Syria. Recruited patients were adults (≥18 years) with an acute (<72 h) conflict-related extremity injury not suitable for primary closure.

Results: Median age was 28 (interquartile range [IQR] 21–34) years. 155/165 (94%) patients were male. On admission, the median systolic blood pressure was 120 (IQR 110–130) mmHg, the median heart rate was 96 (IQR 85–110) beats per minute, and the median hemoglobin level was 133 (IQR 113–144) g/L. 93/165 (56%) patients had at least one fracture. The most common mechanism of injury was gunshot (100/165 [61%] patients), followed by blast (63/165 [38%] patients). 43/165 (26%) patients had concomitant injuries. Bleeding requiring blood transfusion affected 56/165 (35%) patients. Only 1 patient received more than 10 units of packed red blood cells. Wound infection was found in 29/165 (18%) patients. The median length of stay was 10 (IQR 5–37) days. After 5 days, 92/165 (56%) patients had obtained wound closure. One (1%) patient died during hospital stay.

Conclusion: Males were highly overrepresented amongst the patients. Compared to previous similar studies, gunshot as a mechanism of injury was unusually frequent. Fractures were common, including open fractures. Bleeding was a common complication, but massive transfusions were rare. The mortality of the patients was low in comparison to non-conflict civilian trauma hospitals.

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The Nature of Terror Medicine

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Introduction: Clinicians play a pivotal role in responding to victims of terror, yet we know little about the typology and the type of trauma inflicted. In the past, organization-sponsored terrorism was perceived as the major threat; however, since 2021, more than 50 per cent of ASIO's priority caseload is domestic extremism, paralleled by a global surge of 320 per cent from 2016 to 2021. Government sources indicate that the most likely form of terrorism in Australasia will involve attacks by lone actors or a small group using simple attack methodologies and rudimentary weapons targeting crowded places.

Methods: This report will provide context and deepen understanding of the terrorism threat posed by all sources, focusing on lone actors (using the Christchurch Mosque massacre as a case study). It will examine methods, targets, and the health implications for emergency physicians to enhance prevention, preparedness, response, and recovery from terrorist events using datasets such as the Global Terrorist Database (GTD), Counterterrorism agency analysis, and a comprehensive literature review.

Results: A terrorist act committed by a lone actor represents a distinctive form of political violence targeting individuals/groups perceived as "others" or "outsiders," posing a threat to the perpetrator's sense of nationalism, veiled within an anti-government and anti-democratic context. Targets are mainly

religious (31%), private citizens (29%), Government 14% The most common weapons used are incendiary devices or firearms (73%). Chemical use is 1%.

Terror attacks result in greater trauma than that of non-terrorism related trauma, affect more body regions, and cause patients to stay twice as long in the hospital. Victims have a higher ISS and require more surgical interventions.

Conclusion: A perfect storm is emerging globally: climate change, disinformation, conspiracy theories, and inequality. Clinicians have a role in expanding knowledge, advocacy, understanding, response coordination, and expertise in recovery.

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CBRNEmedicine Project: CBRNE Point of Care Testing (CBRNE POCT)–An Innovative Solution for Rapid Detection and Identification of Hazardous Materials for Emergency Medical System, Medical Hubs, and Hospitals

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Summary: The ever-present menace of employing weapons of mass destruction during military conflicts or terrorist attacks requires thorough preparation of the Emergency Medical Services (EMS), medical hubs (MHs), and hospitals for such CBRNE threats. Preparing to respond to the use of CBRNE weapons demonstrates notable gaps in pre-hospital and hospital procedures. The potential influx of casualties from contaminated areas (hot zones) to emergency departments (EDs) or medical hubs (MHs) would require rapid detection and identification of CBRNE agents.

The research aimed to design new procedures for the rapid detection and identification of CBRNE agents directly at the patient's bedside (CBRNE Point of Care Testing). The study was conducted over three years. Tests of the portable detection devices and simulations of CBRNE incidents were conducted as part of it. In total, twenty-one simulations and seven special tests to assess the new procedures were completed.

The assessment of the capabilities of portable detection equipment, detection and identification methods, as well as AI-supported CBRNE triage protocols, helped to develop new procedures for EMS, MHs, and EDs. These new procedures allow for rapid detection and identification of hazardous materials (biological, chemical, radiation/nuclear) precisely at the place where medical assistance is provided. The AI-supported rapid detection and identification of CBRNE agents on/in the victim's body helps to determine the scale of contamination (external and internal) and its potential adverse impact on the victim and the medical personnel's organisms. In turn, the procedures following the CBRNE detection and identification accelerate the application of medical countermeasures and specialist treatment.

The implementation of CBRNE medicine procedures and equipping the EMS/MHs/EDs with portable diagnostic equipment (CBRNE Point of Care Testing instruments) increases the safety of medical staff and the responsiveness of the Medical Rescue System to CBRNE threats.

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CBRNE Medicine Training Project for Medical Personnel – The Polish Experience

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Summary: The augmented risk of incidents involving CBRNE agents as a consequence of the war in Ukraine and possible terrorist activities requires the proper preparation of Polish medical personnel to provide specialist medical care. The research conducted by the authors in 2021-2022 uncovered inadequate readiness of the Emergency Medical Services and the Health Care System in Poland for CBRNE threats. The urgent need to address this grave problem inspired a specialist educational program for medical personnel, the CBRNEmedicine (Real Action) Training Project. The agenda of each two-day workshop (dedicated to biological, chemical, and radiation/nuclear agents) focused on three key areas: pre-hospital care, medical decontamination, and in-hospital treatment. The CBRNE medicine (Real Action) Training Project offered comprehensive training in emergency and disaster management, CBRNE triage and initial treatment, rapid detection and identification of CBRNE agents, the use of personal protective equipment, and providing advanced (CBRNE) life support. A vital element of these workshops involves acquiring the capacity to rapidly detect and identify CBRNE agents in direct proximity to the patient, "CBRNE Point of Care Testing initiative". Currently, rapid detection and identification are unavailable within EMS, medical hubs, and the healthcare system. Between 2022-2023, twenty-three specialist training workshops were run for the benefit of selected EMS and hospital personnel. Medical teams participating in the simulations successfully conducted the fast bedside detection and identification of CBRNE agents procedure for triage and initial treatment, thus confirming their capacity to perform this task. The availability of easy-to-use mobile measuring devices enabled and greatly facilitated these procedures directly at the patient's bedside. Overall, the CBRNEmedicine (Real Action) Training Project shaped a new perception of CBRNE threats by the medical staff, set a new direction in the education of civilian medical staff and military professionals, and proved invaluable in the preparation of specialized CBRNE medical procedures.

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Food and Water Supply Threats: An Epidemiological Analysis of Terrorist Attacks From 1970 to 2020

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Introduction: Climate change, geopolitical conflicts, and hybrid threats jeopardize global nutrition security. The objective of this study was to identify and characterize all documented terrorist attacks on water and food supply targets as reported to the Global Terrorism Database (GTD).
Methods: All incidents from 1970 through 2020 with 'food and water' listed as target type were selected. Temporal factors, location, target type, attack and weapon type, perpetrator type, and number of casualties were collated.
Results: 363 incidents across 65 countries were analyzed, resulting in 392 fatal injuries and 302 non-fatal injuries. In this series, 78.2% of incidents targeted water supplies, 21.5% against food supplies, and one targeted both. Most of the targets consisted of food aid programs in conflict areas. Bombings/explosions were the most frequently identified attack type (61.2%), followed by facility/infrastructure attacks (15.7%) and armed assaults (11.0%). There was one case of a radiological threat, and in twelve incidents, chemicals were used.
Conclusion: Food and water supply chains are important targets for terrorism. The water supply chain is targeted far more frequently than the food supply chain. The possible devastating effect is immense on already vulnerable people living in conflict areas and relying on state-led or international food aid programs.

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Counterterrorism Preparedness of Flemish Hospitals - a Cross-Sectional Descriptive Study

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Introduction: The Flemish-speaking northern part of Belgium has a history of terror attacks. Hospitals are particularly vulnerable due to their accessibility, visibility, and high density of patients, staff, and visitors. Cybercrime and terror are extremely booming, with health institutions as ideal targets. This study aims to assess the extent to which Flemish hospitals are prepared for terrorist attacks and extremism.
Methods: All acute hospitals with a specialized Emergency Department (ED) were sent an online survey on demographics, access control, online security, ED security, and security in terror events.
Results: 56 out of the 59 (95%) hospitals responded. None use metal detectors, 8% plan security control for weapons in crises. 3% have 24/7 security personnel for entrance control, 59% have none. 55% have no alternative location for an incident in the ED, 37% have any control on radiation, and only 13% 24/7. 61% provide decontamination, in 14% inside the ED! 33% state that personnel are adequately decon-trained. 49% have adequate personnel protective equipment for CBRN situations, and only 42% of the hospitals have trained personnel to use them. Blocked cyberattacks were reported in 33%, in 3.7% the attack caused leaking of patient data, in 5.6% there was unavailability of files, and in 3.7% patient care had to be canceled or seriously delayed. 48% of the hospitals have their own 24/7 service to counter cyberattacks. There had been a real terror threat in 9% of the hospitals, and the overall threat for physical attacks was scored at 3/10. The threat of cyberattacks scored 5.9/10. 66% have no protocol for terror attacks in their region, 45% have no scenario for an incident inside the hospital, and 91% have no scenario for secondary attacks on the hospital.
Conclusion: Counterterrorism defense measures vary across our hospitals but seem frequently inadequate. Cyberattacks are a real threat with serious impacts.

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Rapid Identification of Critical Factors Influencing Pediatric Trauma Mortality in Disaster Settings

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Introduction: This study aimed to investigate the early assessment of pediatric trauma patients(PTPs) following earthquakes, identifying key in-hospital mortality factors. Effective early assessments and interventions were crucial for pediatric patients due to their unique physiological and psychological responses. Aligning with the Sendai Framework for Disaster Risk Reduction 2015-2030, this research focused on reducing disaster-related mortality among vulnerable populations like children. Prior research had focused on advanced tools, often

found to be infeasible post-earthquake. Furthermore, multicollinearity among factors complicated statistical analysis, thus necessitating the identification of simple, rapid assessment indicators that predicted pediatric mortality.

Methods: This study undertook a comprehensive retrospective analysis of 200 PTPs recorded in the Western China Earthquake Patient Database(WCEPD). The study employed Least Absolute Shrinkage and Selection Operator(LASSO) regression to identify independent variables influencing in-hospital mortality. The study collected 20 baseline indicators that could be swiftly obtained upon patient admission. These indicators included demographic information, vital signs, consciousness status, and injury specifics, such as the nature and location of injuries.

Results: The LASSO regression analysis identified 5 independent factors significantly associated with in-hospital mortality among PTPs: Glasgow Coma Scale/Pediatric Glasgow Coma Scale(GCS/PGCS), Systolic Blood Pressure(SBP), Respiratory Rate(RR), Pulse Rate(PR), and crush injury. Based on these factors, a predictive nomogram was constructed to identify PTPs with elevated in-hospital mortality risks.

Conclusion: Through the application of LASSO regression, this study successfully identified and analyzed 5 simple, rapidly assessable factors predictive of pediatric trauma mortality in disaster settings. The development of a predictive nomogram incorporating these factors provided a powerful tool for early identification and timely intervention.

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Gas Explosion in the Channel Islands: Field Report of a Unique Response

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Summary: Suburban gas explosions are rare in high-income countries. However, in 2022, a major explosion, presumed due to a gas leak, occurred on Jersey in the Channel Islands. This report details the disaster and assesses the emergency response, emphasizing the unique role local parishes played. The report uses information from local reports and the contributing authors' experiences.

At 04:00, a blast in southern Jersey destroyed a block of flats. Windows in nearby streets were shattered, displacing 42 residents. Nine people died immediately, with one more succumbing to blast injuries two weeks later. Being a small island with one hospital and limited resources, the island sought assistance from the nearby United Kingdom. Specialist search and rescue teams were deployed alongside equipment from the UK Coast Guard and Royal Air Force. Despite this support, careful planning was needed to prevent the local hospital from becoming overwhelmed.

Jersey is unique in that, since 1311, it has been divided into twelve religious parishes. Each parish holds a distinct community and owns its church, constable, police force, and town hall. After the blast, the parish system was used to systematically provide medical and social care. Within fifteen minutes of the blast, the nearest parish town hall opened as temporary housing for the displaced. It was staffed by general practitioners, nurses, and crews from St. John Ambulance. It served as a hub for medical advice, first aid, and routine medication prescriptions, preventing the local emergency department from becoming overwhelmed. Hospital beds were reserved for critical injuries, while the walking wounded received care within their community.

This report highlights the importance of sustaining secondary services during a disaster and the strategic role management of low-acuity victims plays. It also demonstrates how existing community and religious connections can be leveraged to deliver care effectively and safely during a disaster.

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Causes of Hospital Evacuations During the 2024 Ishikawa Noto Peninsula Earthquake

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Summary: On January 1, 2024, a magnitude 7.6 earthquake struck the Noto Peninsula in Ishikawa Prefecture, prompting patient evacuations at several hospitals. We investigated the primary causes of hospital evacuations during the acute phase. From July to September 2024, surveys were conducted at seven of the nine emergency-designated hospitals located in northern and central Noto, as well as at two emergency-designated hospitals in Kanazawa City. These surveys covered damage to infrastructure, buildings, and staff, along with basic hospital information such as patient numbers, bed capacity, and the number of dialysis patients. On-site interviews were also conducted. Based on this information, we analyzed the hospitals that carried out patient evacuations and the causes for these evacuations.

Out of the nine hospitals surveyed, six conducted patient evacuations. An analysis of the causes of patient evacuations within the first 72 hours following the disaster, focusing on the relationship between evacuations and factors such as water supply disruptions, power outages, gas supply interruptions, and building damage, revealed that seven hospitals experienced water supply disruptions. Among these, five hospitals evacuated dialysis patients. Of the two hospitals that did not conduct evacuations, one had no dialysis patients at the time of the disaster. At the same time, the other was able to continue dialysis services

due to sufficient water provision from external support, despite the water disruption. After 72 hours following the disaster, evacuations were also conducted due to building damage, and transfers of patients with chronic illnesses were carried out.

During the acute phase of a disaster, the transfer of dialysis patients may become necessary due to disruptions in water and sewage systems, even if there is no risk of building collapse. It is therefore essential to reinforce water and sewage infrastructure, utilize well water, and enhance water supply systems for use during disasters.

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Identifying and Prioritizing Strategies to Strengthen Public Health Preparedness for Nuclear and Radiation Incidents

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Introduction: Nuclear power generation is increasing globally and is expected to triple by 2050. This, combined with the proliferation of nuclear materials, has highlighted the need for enhanced public health preparedness. Although an emergency event has a low probability, it could have a devastating impact on human life. Despite similar risks, emergency response communities around the globe have developed different public health approaches to nuclear and radiation preparedness. To address this challenge, a scorecard approach was piloted to identify and prioritize strategies to strengthen public health preparedness for a nuclear and radiation incident.
Methods: A pilot nuclear and radiation resilience scorecard was applied in a workshop in Montgomery, Alabama, United States, with 14 participants. There were representatives from emergency preparedness and planning (n=7), nursing, operations, program management, radiation safety, safety and security, technical hazards, and academia. Workshop participants discussed each scorecard question and then individually scored the level of resilience using a Likert scale. The questions were organized around the United Nations Office for Disaster Risk Reduction (UNDRR) Ten Essentials for Making Cities Resilient. When consensus was reached, participants developed and prioritized actions.
Results: There were four priority actions identified. This included increasing the outreach of representatives in the nuclear and radiation industry to health facilities. Expanding planning to non-traditional areas such as primary care facilities, education systems, and transport networks. Increasing the scope of emergency warning systems to counter misinformation and creating a standardized process for educating and onboarding public health officials involved directly and indirectly in emergency management. This should include training and exercises focused on nuclear or radiation incidents.
Conclusion: The scorecard approach and the recommended actions provide a path forward for public health systems to function at the highest possible level when preparing for and responding to a nuclear or radiation incident.

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Poly-Crisis: The Co-Occurrence of Natural Disasters and Cyberattacks on Healthcare Entities: A Scoping Review

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Introduction: As healthcare becomes increasingly technology-dependent, cyberattacks are rising in parallel with the growing frequency and severity of natural disasters. Cyber criminals are strategically exploiting system vulnerabilities during disaster response periods, creating a dangerous nexus of simultaneous threats to healthcare organizations. This study investigates the frequency of concurrent cyberattacks and natural disasters targeting healthcare entities, analyzing emerging patterns and common vulnerabilities to inform more resilient security strategies.
Methods: In collaboration with the research team, the medical librarian developed and executed comprehensive searches in Ovid MEDLINE, Ovid Embase, CINAHL, Web of Science Core Collection, Cochrane Library (via Wiley), and IEEE Xplore on August 14, 2024. To capture all relevant literature about cyberattacks occurring with natural disasters, relevant keywords and controlled vocabulary were carefully selected. The remaining results underwent title and abstract screening, followed by full-text screening by two research team members in Covidence. The included full texts were then analyzed for pertinent data about the co-occurrence of natural disasters and cyberattacks affecting healthcare facilities.
Results: A total of 2,502 results were retrieved; duplicates were removed, and 2,209 unique results remained. 110 articles were screened based on title and abstract, then the remaining articles underwent full-text screening, and 43 articles were included in the study. These articles included almost exclusively cyberattacks during the COVID-19 pandemic. The majority occurred in the US, UK, and Ireland. Common themes included increasing reliance on technology and remote work increased the risk of cyberattacks, with a multitude of recommendations on how to better protect hospital systems from future attacks.
Conclusion: With the increase in cyberattacks and natural disasters, we will likely see an increasing co-occurrence.

Future work needs to concentrate on increasing cybersecurity to diminish threats to healthcare systems, to prevent morbidity and mortality, protect personal information, and prevent financial losses.

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Magen David Adom Preparedness for Military Conflict, Natural Disasters, and Cybersecurity Threats

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Introduction: Magen David Adom (MDA), Israel's national Emergency Medical Service (EMS), is responsible for responding to crises, including military conflicts, natural disasters, and cyber threats. Under the Magen David Adom Law 5710- 1950, MDA supports the Israeli Defense Forces (IDF) Medical Corps and ensures peacetime readiness.
Methods: MDA's All-Hazards approach creates adaptable emergency response plans for diverse crises, incorporating sheltering, mass casualty management, and communication continuity. Close collaboration with the National Emergency Management Authority (NEMA) and the Ministry of Health ensures that preparedness for military conflict strengthens readiness for natural disasters.
Results: Following the October 7, 2023, Hamas attack, MDA rapidly updated its preparedness to address prolonged, multi-front warfare. Key goals included plans for extended power outages and managing multiple simultaneous incidents. Enhancements included autonomous regional hub operations, strengthened satellite communications, and mobile medical patrols. MDA's resilience in non-traditional emergencies was demonstrated during the July 2024 CrowdStrike cybersecurity incident, where rapid manual operations and alternative communication methods ensured uninterrupted emergency response.
Conclusion: MDA's generic emergency plans, adaptable across various crises, provide a robust response model. This flexible approach, reinforced by interagency cooperation, strengthens MDA's emergency preparedness and offers insights for EMS organizations worldwide.

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Thunderstorm Asthma Epidemics: A Scoping Review on Healthcare Systems Response and Mitigation

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Introduction: Thunderstorm-associated asthma events (TAE) are unique natural phenomena characterized by sudden surges in respiratory emergencies coinciding with severe weather. TAEs have affected multiple countries and significant population cohorts globally. This scoping review examines the extent of literature on TAE through the dual lenses of an emergency management framework and healthcare system burden.
Methods: Comprehensive searches in Ovid MEDLINE, Ovid Embase, CINAHL, Scopus, Web of Science Core Collection, and Cochrane Library (via Wiley) were conducted on September 20, 2024. After removing duplicates, 1,710 unique results remained for the initial title and abstract screening in a web-based tool called Covidence. Findings reported according to PRISMA-ScR.
Results: Thirty-three studies were included; ten discussed difficulties in response, and twenty-one provided recommendations for future mitigation. The most frequent response challenges described were lack of medication and insufficient equipment and beds (50% each). Twenty-one studies included mitigation recommendations; the most discussed were early public weather warnings (57%).
Conclusion: Only one article mentioned a mitigation strategy implemented prior to the event. The state of the literature reflects a lack of both response challenges and implementation of mitigation strategies for TAE. This highlights the need for more publications on mitigation and response plans.

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Addressing a Climate Emergency Amidst the COVID-19 Pandemic: A Qualitative Study on a Hospital Evacuation During the 2021 European Floods

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Introduction: In July 2021, several European countries were affected by severe floods, with water levels of the river Meuse reaching a record high. It was decided to completely evacuate VieCuri Medical Center (Venlo, the Netherlands), a hospital directly adjacent to this river. This study aimed to explore the decision-making process of this emergency hospital evacuation.
Methods: This interview-based qualitative study assessed the decision-making process for this hospital evacuation. Data were collected through semi-structured interviews with eleven key

participants and analyzed according to the principles of thematic content analysis.
Results: Three themes were constructed from the interviews: risk assessment, COVID-19 experience, and collaboration. The hospital's preparedness for evacuation could be improved by thoroughly analyzing locoregional hazards and preparing for loss of regional healthcare capacity. The use of a national patient coordination center, which was established during the pandemic, enabled the rapid assessment of the capacity of destination hospitals and facilitated patient transfers.
Conclusion: The experiences of the COVID-19 pandemic and the availability of a national patient coordination center were key factors in performing this evacuation. Hospitals should regularly assess potential contingencies and plan for (locoregional) loss of health care services.

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Global and National Health Advisories on Reducing Risk from Extreme Heat Are Not Fit-for-Purpose – a Multi-Country Review

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Introduction: Global health risks from extreme heat are escalating at unprecedented rates. Before the hottest years on record, mortality estimates exceeded 480,000 deaths per year for 20 years. For some countries, attributed mortality is higher than any other natural hazard. The universal emergency medical and health response aims to reduce harm through early warning and self-protection advisories. Unlike other natural hazards, such as SARS-CoV-2, no standardized health protection advisory is recommended by health authorities, nor has existing content been evaluated for efficacy in reducing risk. The primary objective of this study was to analyze, compare, and assess the quality of health advice provided by health authorities in different countries aimed at reducing the risk of extreme heat.
Methods: The study applied a qualitative multi-case study methodology using WHO HEPR (2023) guidance and ISO 31000 risk management standard to create domains to compare, analyze, and grade national/state health advisory guidance of 32 countries. Local country heat hazard classification indices and contextual factors were incorporated. Analysis was performed using QSR NVivo12.
Results: Health protection/risk mitigation advice varied across all framework domains. All countries included hazard-threat parameters, vulnerable groups, actions to reduce exposure, improve cooling, and manage fluid intake. Interventions were universally generic, unclear, and often misaligned with the local hazard scale. No country recommended in-situ temperature or wet bulb monitoring, detailed water consumption rates, or signals to confirm dehydration/rehydration, defined triggers to seek medical advice, included actions in the event of power loss or failure to maintain a safe thermal range, or business continuity actions. Quality rankings did not correlate with a higher relative risk of extreme heat events.
Conclusion: Significant review and improvement of existing health advisories are urgently required to reduce the risk from extreme heat. Failing to address current deficits will contribute to the rising catastrophic mortality impacts from extreme heat events.

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Lessons Learned from the Management of a Mass Casualty Event While under Fire: An After-Action Report from a Frontline Hospital in Southern Israel

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Summary: Samson Assuta Ashdod is a 300-bed hospital located in Southern Israel and is the equivalent of a Level 2 trauma center. During the October 7, 2023, massacre, Assuta received a total of 114 patients while under direct threat from the attack. Due to the ongoing threat, a mass casualty event was declared in the hospital, but staff were not called in from home out of concern for their safety. As a result, the response was limited to on-duty personnel and those who arrived voluntarily. Additionally, due to safety reasons, the emergency department could not be evacuated of routine patients, requiring the management of mass casualty patients alongside existing patients. This after-action report presents key findings and lessons learned, focusing on how preparedness influenced the response under these unique conditions. The analysis covers staffing, communication, documentation, command and control, training and preparedness, facilities and equipment, and staff discipline. The findings highlight both strengths and challenges. Staffing limitations emphasized the need to define critical personnel and develop strategies to rapidly adapt roles and responsibilities. Communication issues, especially during simultaneous threats, pointed to the need to adjust modes of communication, including internal and external channels of communication. Inadequacies in documentation significantly affected care continuity of care. The Command-and-Control structure set in place proved itself adaptable to evolving needs. Training was found to be crucial for the response, but revealed gaps in readiness for urgent and conflicting needs. Facility limitations, particularly the inability to clear the emergency department, impacted patient management. Discipline among staff and a common purpose proved vital for maintaining order in the chaotic conditions and MCE. This report provides insights into refining disaster response strategies for hospitals facing MCEs while under threat and underscores the importance of flexible and resilient emergency preparedness

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Analyzing Unmanned Aerial Vehicle (Drone) Attacks: A Disaster Medicine Perspective

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Introduction: Unmanned aerial vehicles (UAVs), or drones, have rapidly diversified in capabilities and applications due to advancements in technology and increased affordability. While drones positively impacted sectors such as healthcare and consumer delivery, particularly in remote and austere environments, their use has also been exploited by Violent Non-State Actors (VNSAs) for terrorist attacks. This study aimed to analyze the global prevalence of drone-related attacks targeting civilians and critical infrastructure, focusing on enhancing hospital and prehospital care preparedness in response to these emerging threats.

Methods: A retrospective review of the Global Terrorism Database from 1970 to 2020 assessed the prevalence of drone-related attacks. Cases were excluded if they had insufficient information regarding drone involvement or if government entities conducted the attacks. Trends in the number of attacks per month, fatalities, and injuries were analyzed using time series and trend analysis.

Results: The database search yielded 253 drone-related incidents, with 173 meeting the inclusion criteria. These incidents resulted in 92 fatalities and 215 injuries, primarily affecting civilian targets (76 events, 43.9%), followed by military targets (46 events, 26.5%). The Middle East was the most affected region (168 events, 97% of total attacks), with the Islamic State of Iraq identified as the most common perpetrator (106 events, 61.2%). Nearly all attacks involved explosive devices attached to drones (172 events, 99.4%). Time series with linear trend analyses indicated an upward trend in drone attacks by VNSAs over the years, leading to increased morbidity and lethality.

Conclusion: There has been a notable increase in drone attacks over time, characterized by higher lethality and morbidity. With injuries outnumbering fatalities, there is an urgent need for improved response strategies. Investment in training for medical personnel, bolstered security measures, and targeted research is essential for effectively managing mass-casualty incidents resulting from drone attacks.

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From Simulations to the Scene: Mobile Training for Life-Saving Trauma Interventions in Mass Casualty Events

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Summary: During the October 7, 2023, massacre in Israel, a large number of communities in multiple locations were attacked simultaneously. Many of these were cut off from help, resulting in delays in the evacuation of patients from the field to higher levels of care. This has highlighted the need for capacity building among first responders in performing life-saving procedures to victims of trauma, as well as managing mass casualty incidents before the arrival of ambulance paramedics. Three types of first responders were identified as providing crucial trauma care in these circumstances: the Army medical corps, local, community-based security teams, and medical staff in peripheral hospitals. To streamline training across a large geographical area, a mobile emergency medical training unit was established to bring expertise and the equipment to first responders nationwide. This is the first mobile simulation unit in Israel run exclusively and voluntarily by Emergency Physicians. Providers benefit from being trained and drilled together as a team on familiar ground through high-fidelity simulations. To date, over 100 workshops have been completed, training more than 3,000 medical personnel. Following the MARCH principles of trauma care, prioritized skills include hemorrhage control and airway management, prevention of hypothermia and expedient evacuation, and the integration of these into the assessment and care of both the individual trauma patient as well as multiple victims in mass casualty events. The workshops are modular and adapted to the professional level and requirements of the participants. To evaluate the efficacy of the workshops, pre- and post-workshop knowledge, proficiency, and confidence levels are continuously assessed at a programmatic level through surveys and qualitative methods.

Mobile simulation units run by Emergency Physicians likely offer uniform, high-level emergency trauma care training to a wide spectrum of providers in their native environment.

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Coordinated Terror Attacks and Healthcare Facilities: Future Considerations and Implications for Hospital Preparedness and Response–A Scoping Review

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Introduction: Coordinated Terror Attacks (CTAs) have evolved significantly with increased complexity and deliberate strategies to maximize casualties and societal impact. These attacks, characterized by multiple incidents across space and time, may target healthcare facilities directly or through secondary attacks. Recent events demonstrate a concerning rise in CTAs that pose a unique threat to the healthcare infrastructure, with complex challenges. This scoping review examines literature on CTAs targeting hospitals and hospital responses to recent major CTAs to identify potential gaps in preparedness and response. Based on these findings, the review offers policy recommendations to enhance hospital readiness, response protocols, and overall resilience.

Methods: This scoping review used the Arksey and O'Malley five-step framework. Manuscripts were retrieved from six databases and search engines using keywords relating to coordinated attacks and hospital facilities. Analysis focused on evaluating whether the terror event can be characterized as a CTA, whether it directly targeted or impacted a healthcare facility, and how such a facility responded.

Results: Of 1,616 papers screened, 26 met the inclusion criteria: seven addressed CTA events in which healthcare facilities were confirmed targets, 12 publications examined how non-targeted hospitals responded to CTAs, and six secondary data analyses examined the broader trend of terrorist attacks targeting hospitals. Notable CTA events were referenced as key examples for discussion. Characteristics of the attacks, hospital response, lessons learned, author recommendations, and proposed methods for CTA hospital preparedness were extracted.

Conclusion: The findings highlight a gap in the literature and suggest an opportunity for further research into the threats CTAs pose to healthcare. Increasing evidence of CTAs underscores the need for hospitals to prepare specifically for CTAs. Hospitals must harden operationally and structurally, integrate system-wide communication, and systematically allocate resources in a stepwise fashion to improve the response to waves of casualties and maintain functionality during cascading, multisite, and/or prolonged attacks.

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Regional Trends of Natural Disasters in Asia and Oceania From EM-DAT Database (1923-2023)

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Introduction: As climate change worsens, there is growing concern about the intensification of extreme weather events and complex disasters. Catastrophic events such as tropical storms and floods have enormous impacts on human health in the affected areas. Furthermore, the regional burden of natural disasters has been unclear. This study aims to understand the trend of natural disasters in Asia and Oceania over the past 100 years.

Methods: A descriptive analysis was performed using the public EM-DAT database (CRED/UCLouvain, Brussels, Belgium, version 20241.0). The study period was from 1923 to 2023. Disaster categories were geophysical, hydrological, meteorological, climatological, biological, and extraterrestrial based on the Peril Classification 6 families (2014). We used R 4.4.2 for data analysis.

Results: The total number of natural disasters was 7,523. By disaster subgroup, 3,144 hydrological disasters (42%) were registered, followed by 2,518 meteorological (33%), 1,137 geophysical (15%), 382 biological (5%), and 342 climatological (5%) disasters, with no extraterrestrial disasters reported. The most common subregions were Southern Asia (2,182, 29%), South-eastern Asia (2,094, 28%), and Eastern Asia (1,843, 24%). The total number of deaths by type of disaster was highest for drought, flood, earthquake, storm, and epidemic, in that order. The total number of affected people by type of disaster was highest for floods, droughts, storms, earthquakes, and extreme temperatures, in that order.

Conclusion: In Asia and Oceania, the proportion of hydrological and meteorological disasters is higher than that of other types of disasters, and the number of these disasters has increased in recent years. Although there was a reporting bias with pre-2000 data, it suggested that demands for medical, financial, and social support have increased. It is crucial to prepare adequate responses to the growing demand regarding each type of disaster risk. Mitigation and adaptation to all types of disaster risk are important.

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Pediatric Decontamination: A Scoping Review of Current Methods and its Effectiveness

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Introduction: Children are uniquely vulnerable to chemical, biological, radiological, and nuclear (CBRN) events due to anatomical, physiological, and psychological differences. Current decontamination practices are adapted from adult protocols. This scoping review seeks to evaluate current practices, challenges, and special considerations in pediatric decontamination during CBRN events.
Methods: A scoping review was conducted using six databases in accordance with the PRISMA-ScR framework. Studies were eligible if they evaluated decontamination methods involving children (0-18 years) in real or simulated CBRN scenarios. Fourteen studies met the inclusion criteria, and data were thematically analyzed into four domains.
Results: Disrobing is widely recognized as a critical first step in the decontamination process, and 43% of the studies reviewed identified it as such. When done immediately and appropriately, it can remove a significant amount of contaminants, although its effectiveness varies based on how much of the body is covered and the nature of the exposure. Dry decontamination was discussed in 21% of studies, and wet decontamination was the most commonly reported approach, appearing in 93%. Key pediatric challenges included hypothermia, psychological distress, separation from caregivers, and difficulties managing non-ambulatory or special needs populations. Few studies addressed age-specific protocols or long-term psychological impacts. The results are presented in procedural order to reflect the typical sequence of decontamination in CBRN response.
Conclusion: Current decontamination guidelines inadequately address pediatric-specific needs. There is a critical need for standardized, age-appropriate guidelines that integrate caregiver support and psychosocial considerations. A pediatric decontamination algorithm was developed to consolidate current evidence into a practical framework for CBRN mass casualty incidents.

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The Effectiveness of CBRNE Training in a Hospital Setting: A Scoping Review

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Introduction: The risk of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) incidents has grown in recent years due to multiple factors, including rising terrorism threats, technological advancements, ongoing conflicts, industrial accidents, and emerging infectious diseases. Hospitals are critical response centers during these incidents, yet CBRNE events pose unique challenges to healthcare operations, staff safety, and patient care. Comprehensive training and preparedness are essential for strengthening hospitals' disaster response capabilities and protecting healthcare workers and patients. This scoping review aims to assess the effectiveness of various CBRNE training methods in developing healthcare providers' competencies and knowledge within hospital settings.
Methods: Collaborating with the research team, the medical librarian developed and executed comprehensive searches in Ovid MEDLINE, Ovid Embase, Scopus, Web of Science Core Collection, and CINAHL. Relevant keywords were carefully selected to capture all relevant literature pertaining to CBRNE training in hospital settings. Two research team members used Covidence to analyze the results through title, abstract, and full-text screening. Data was analysed to evaluate the effectiveness of various CBRNE training methods.
Results: After screening and meeting the inclusion and exclusion criteria, 23 papers were included in this review. Training effectiveness was thoroughly documented in 91% of the reviewed articles. Nursing personnel emerged as the predominant category of trained healthcare providers within hospital-based programs. The most prevalent training methodology observed was the utilization of tabletop exercises, and biological hazards were the most commonly used threats in scenarios. None of the articles concluded whether any training methods were superior or optimal to others in enhancing effectiveness.
Conclusion: Overall, CBRNE training, when implemented effectively through a combination of didactic education, simulations, drills, and virtual reality exercises, improves the knowledge and competencies of healthcare professionals. It can lead to better preparedness for responding to threats in the hospital environment and ultimately may improve patient outcomes and public safety.

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Quality of Life of Patients with Conflict-Related Extremity Injuries: A Study on Civilians Injured in Syria and Iraq

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Introduction: This study investigates the quality of life among civilians with acute conflict-related extremity injuries sustained in Syria and Iraq, comparing Negative-Pressure Wound Therapy (NPWT) to standard treatment.
Methods: Data were derived from a randomized controlled trial. Quality of life was assessed using the Self-Reporting Questionnaire 20 (SRQ-20) (range: 0–20) and the Wound-QoL (range: 4–7) questionnaires, with baseline and follow-up measurements. Statistical analyses compared NPWT to

standard treatment, examining total scores as well as improvements. For the SRQ-20 results, the number of patients with a total score above the screening cut-off value was compared. For the Wound-QoL results, individual item responses were analyzed. Student's t-test was used.

Results: The median number of days between baseline and follow-up was eight (IQR: 4–21) for SRQ-20 and four (IQR: 4–7) for Wound-QoL. No differences were found between standard treatment and NPWT for the SRQ-20 scores at baseline or at follow-up, nor in the number of patients with scores above the screening cut-off value. For Wound QoL, patients receiving NPWT had better total scores at baseline than patients who received standard treatment (means of 10.3 vs. 13.1, 95% CI: 1.45–4.15), but there were no differences at follow-up (means of 7.2 vs. 7.4, 95% CI: -1.08–0.77). When comparing individual items at baseline, patients receiving NPWT had better scores on questions assessing unpleasant smell, poor sleep, and disturbing discharge compared to those receiving standard treatment, with mean differences of 0.45 (95% CI: 0.21–0.69), 0.65 (95% CI: 0.23–1.1), and 0.88 (95% CI: 0.69– 1.1), respectively.

Conclusion: The results indicate that NPWT offers early benefits for symptoms of unpleasant smell, poor sleep, and discharge compared to standard treatment. However, these differences did not persist. The possible short-term gains in quality of life with NPWT should be weighed against the technique's associated costs, especially in low-resource settings.

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Misinformation, Disinformation, Malinformation (MDM): Weaponized Health Communication

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Summary: During Hurricane Helene, misinformation spread rapidly across media platforms, complicating public understanding and response efforts. As the storm neared, false information fueled confusion and anxiety, particularly among vulnerable populations, undermining the effectiveness of official, fact-based communication. Much of this misinformation originated on social media, where users shared unverified and often sensationalized updates about the hurricane's impact. This phenomenon highlighted the dangers of "weaponized health communication."

Traditional and non-traditional media played significant roles in spreading misinformation. In the rush to deliver updates, news outlets reported on speculative scenarios, sometimes based on unnamed sources, which blurred the lines between fact and fiction. This resulted in conflicting messages, leaving the public uncertain about which actions to take and which guidance to trust.

A public health, disaster management, and medicine literature review examined how misinformation (MDM) spreads during crises. Case studies from domestic and international contexts revealed key themes about state-sponsored information operations, the role of social media, and the challenges posed by public distrust. These insights informed potential countermeasures to mitigate MDM in future crises.

Various organizations, including governments, militaries, and non-governmental institutions, have developed strategies to counter MDM in public health and disaster contexts. However, widespread distrust in government and the effectiveness of MDM campaigns on social media complicate these efforts. Countermeasures like Inoculation Theory, which has been used to combat climate science denial and anti-vaccine misinformation, show promise in mitigating malicious MDM. By using targeted messaging to "inoculate" the public against false narratives, these methods could help protect vulnerable populations during critical events.

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Trauma Stabilization Points: Comparative Insights From Iraq, Gaza, and Ukraine

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Summary: Trauma Stabilization Points (TSPs) represent the initial tier of professional, fully trained medical response equipped to provide trauma care. While the US military has used a similar system for years, the first non-military TSP implementation was in late 2016 as U.S.-backed Iraqi and Kurdish forces advanced on the city of Mosul, Iraq. TSPs formed the foundation of the Mosul trauma response and were instrumental in its success. Although encountering many logistical and funding challenges, TSPs in Iraq provided effective trauma care and served as a blueprint for future applications. In 2018, TSPs were established in Gaza when violence erupted between Palestinian demonstrators and Israeli security forces; these TSPs also had a profound impact on trauma outcomes. In the following years, TSPs were utilized in response to clashes in other areas, notably in 2021 in Jerusalem. Following the attacks of October 7, 2023, and Israel's subsequent military operation, TSPs were implemented throughout the region. However, they have faced significant logistical and security challenges. In response to the 2022 full-scale invasion of Ukraine, many international organizations and local responders formed ad hoc trauma responses that complemented the established Ukrainian healthcare system, effectively managing the initial civilian trauma response. As the frontlines stabilized, the Armed Forces of Ukraine implemented TSPs, locally known as "STAB" points, throughout areas of active fighting. Ukrainian STAB points are characterized by increased capabilities, such as access to basic surgical interventions, labs, and imaging. They also differ by treating patients days after initial injury, which is uncommon in other settings. TSPs in Iraq, Gaza, and Ukraine have effectively addressed conflict related trauma by providing structured, adaptable medical

interventions, whether for immediate stabilization or delayed patient reception. However, more comprehensive outcome data is essential to refine clinical and operational best practices.

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Modern Technologies in the Treatment of Gunshot Injuries of Soft Tissues and Bones in Children

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Summary: The manuals on military field surgery describe in detail the strategy and tactics for treating wounded soldiers in military conflicts. However, when children are provided with assistance during military conflicts and acts of terrorism, the situation reverses. Children become accidental or secondary participants in military operations and are admitted to civilian children's hospitals, where the staff often has no experience treating such wounds.

During the period from 2014-2024, 156 children with mine-explosive and gunshot wounds were treated at the Clinical and Research Institute of Emergency Pediatric Surgery and Trauma (Moscow, Russia), including patients injured in the acts of terrorism in Kerch (2018), Kazan (2021) and military conflict in Ukraine (2014-2024). The ages of the children ranged from 4 to 17 years old. There were 68.6% boys. The main locations of wounds were lower limbs - 134 (46.7%), upper limbs - 47 (16.4%), and head - 50 (17.4%). Thoracoabdominal injuries were detected (found) in 37 (12.9%), and spinal injuries in 19 (6.6%) children. Among all (the children, 25 traumatic limb amputations and 56 open bone fractures were noted.

To improve the quality of treatment, surgical treatment of wounds was applied along with modern methods of physical treatment. Vacuum therapy was used in 72 patients, hydrosurgical treatment in 23, ultrasonic cavitation treatment in 45, and low-temperature argon plasma in 68. Satisfactory results were achieved in all of the observations.

Compliance with the principles of military field surgery in the treatment of wounds during the provision of assistance to children with mine-explosive and gunshot wounds and the using modern technologies allow us to prepare the wound surface for the final stage of plastic closure in a short time, to preserve the rehabilitation potential and to return the child to the social environment.

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Translating New TCCC Challenges into TECC Lessons Learned

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Introduction: This abstract analyzes new challenges in combat medicine (TCCC) in the conflict scenarios of the Ukrainian front, the October 7th attack, and the Gaza War, and the Hizbullah-Israel escalation, between 2022 and 2024, and what lessons learned can be integrated in a civilian environment, according to TECC guidelines and algorithms.

Methods: Methodology is based on bibliographical revision, providing a framework for TCCC's emerging patterns. Afterwards, an analysis based on the TECC guidelines and Hartford Consensus algorithms is conducted to infer the main lessons to integrate into civilian tactical care situations.

Results:

1. Ukrainian front. The use of conventional artillery and drones as guided projectiles in swarm or isolated configurations, and lately as flame-throwers, adds to mass hemorrhage injury patterns as fractures from collapsed structures and burns.

2. Gaza front. October 7th combined a high lethality from multiple locations, active shootings, hostage taking, and the use of grenades and fire in close quarters. Operations in Gaza feature underground warfare and massive use of artillery and IEDs, coexisting with stabbing attacks and car rammings in the West Bank. Mass bleeding injury patterns add collapsed structure, crush traumatic injuries, and non-lethal mental issues.

3. Lebanese front. Hizbullah increased the use of rockets and drone attacks, causing mass casualty incidents, looking for the collapse of the regional hospital network. Israeli tampering with Hizbullah's pagers as IEDs leveraged the device ergonomics to maximize lethality and injury patterns. Casuistry doesn't reveal new injury patterns, but rather the multiplication of the number of victims.

Conclusion: TECC-related algorithms remain valid. Lessons learned must include a) management of a massive number of simultaneous casualties; b) capabilities for tactical rescue and care in underground or collapsed structures; c) a high number of casualties with primary, secondary, and tertiary blast injuries due to explosions and different severity burnings because of the use of fire in open and confined environments.

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Assessment of CBRN Preparedness and Knowledge Among Rashid Hospital Trauma Center Emergency Physicians and Residents, Dubai Health: A Cross-Sectional Survey

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Introduction: Preparedness for Chemical, Biological, Radiological, and Nuclear (CBRN) incidents is a critical component of emergency medicine, particularly in high-risk geopolitical regions. However, little is known about CBRN readiness among healthcare providers in the Gulf region, including the United Arab Emirates. This study assessed the knowledge, experience, and training needs related to CBRN among

emergency medicine staff at Rashid Hospital Trauma Center (RHTC), Dubai Health.

Methods: A cross-sectional survey was conducted among emergency medicine physicians and residents at RHTC, Dubai Health. A self-administered questionnaire assessed knowledge, confidence, prior training, and institutional preparedness related to CBRN incidents. The study received IRB approval from both Dubai Health and Beth Israel Deaconess Medical Center.

Results: Out of 118 invited participants, 94 completed the survey (response rate: 82%). Only 39% had received formal CBRN training. While trained respondents demonstrated significantly higher knowledge scores ($p < 0.01$), overall confidence in managing CBRN events remained low. Awareness of institutional preparedness was limited, with over 70% unsure about their hospital's decontamination or response plans. Most participants (90%) expressed interest in further CBRN training, particularly in mass casualty triage and toxidrome management.

Conclusion: The study highlighted knowledge and preparedness gaps among emergency medicine residents and emergency physicians at the Rashid Hospital trauma center. These findings highlight the urgent need for structured, hospital-based CBRN training programs and integration of preparedness protocols into routine emergency care systems in the UAE.

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The Radiation Emergency Simulation in Indonesia

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Summary: Indonesia's three research reactors (RSG-GAS in Serpong, TRIGA2000 in Bandung, and the Kartini reactor in Yogyakarta) play a critical role in advancing nuclear research but also pose significant risks, including the release of radioactive materials due to accidents or natural disasters. Despite these risks, preparedness and response mechanisms for nuclear emergencies, particularly in healthcare settings, remain underexplored compared to the country's established natural disaster management systems.

This field report evaluates the multidisciplinary approach to nuclear disaster preparedness in Indonesia, focusing on the implementation of radiation accident simulation. The Indonesian Ministry of Health coordinated the radiation emergency simulation. It involved key stakeholders, including three National Nuclear Disaster Referral Hospitals (RSUP Fatmawati, RSUP Hasan Sadikin, and RSUP Dr. Sardjito), the Indonesian Nuclear Regulatory Agency (BAPETEN), the National Research and Innovation Agency (BRIN), Public Safety Center 119, and professional organizations. The simulation integrated theoretical and practical components, effectively enhancing participants' understanding of nuclear emergency management and response. Simulations included pre-hospital treatment at accident sites, ambulance transportation, decontamination procedures, and the preparation of hospital emergency departments. The expert observers evaluated the simulations, but standardized evaluation tools need to be developed. The limited availability of radiation detection devices and personal protective equipment (PPE) was identified as a gap in the infrastructure. There is a need to include BNPB in the simulation, as it is the government agency designated for coordinating disaster management activities in Indonesia.

Multidisciplinary radiation emergency simulations are essential for effectively responding to nuclear emergencies, particularly in medical emergency preparedness and response. While the drills improved knowledge and operational coordination, developing standardized evaluation tools and addressing infrastructure gaps and resource allocation are critical next steps for optimizing preparedness.

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Disaster Risk Reduction: UNDRR and ISC Review of Hazard Information Profiles Ahead of 2025 Global Platform

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Summary: Three years after their initial release, the United Nations Office for Disaster Risk Reduction (UNDRR) and the International Science Council (ISC) are undertaking a review of the UNDRR/ISC Hazard Information Profiles (HIPs) ahead of the UNDRR Global Platform for Disaster Risk Reduction that will take place in June 2025.

These HIPs provide an authoritative reference on the scope, name, and definitions of hazards of relevance to the Sendai Framework for Disaster Risk Reduction. The HIPs were hailed as 'groundbreaking' in the Report of the Midterm Review of the Sendai Framework in 2023 and continue to provide extensive information to various stakeholders across different sectors, including disaster risk reduction planning, monitoring, training, and research.

They are widely utilized by intergovernmental bodies, national governments, disaster management agencies, statistical offices, private sectors, and academic institutions, fostering a more comprehensive and unified approach to disaster risk monitoring, recording, and planning. For example, the World Health Organization (WHO) and the International Organization for Migration (IOM) have incorporated these profiles in their reference systems and are employing them in some of their trainings globally. Additionally, UNDRR uses these profiles for monitoring disasters, with the HIPs supporting a new hazardous event and disaster losses and damages tracking system developed by UNDRR, UNDP, and WMO in partnership with many. Many other stakeholders use them

as foundational tools for disaster planning and response efforts, research, and teaching.

In this review cycle, particular emphasis will be placed on the 'multi-hazard context', aiming to enhance understanding of the interplay between different hazards, which can result in cascading, compound, and complex events. This will facilitate the utilization of the profiles for multi-hazard risk assessment and early warning systems. Leveraging the latest advancements in machine learning, efforts have been made to make the HIPs more machine actionable, thereby expanding their usability and applications

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Trauma Profiles and Treatment of War-Wounded Patients in a Role 4 Hospital in Ukraine: A Three-Year Retrospective Analysis

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Introduction: The war in Ukraine has forced hospitals near the frontlines to overcome a considerable number of complex injuries under challenging conditions. This study presents a comprehensive analysis of 7,758 war-wounded patients admitted to the first traumatological Intensive Care Unit of Mechnikov Hospital in Dnipro, Ukraine, a civilian hospital acting as the main role 4 facility for the eastern and southern zones, between 2022 and 2024.
Methods: A retrospective two-tiered study design was employed. The first tier analyzed automated hospital records for all war-wounded patients, focusing on demographics, mechanisms of injury, injury severity, and outcomes. The second tier consisted of a manual review of 41 detailed patient files to provide in-depth clinical insights. Metrics included injury patterns, prehospital interventions, surgical procedures, and ICU mortality rates.
Results: Explosive injuries accounted for the majority of cases across all years (93.2% in 2022, 93.7% in 2023, and 88.5% in 2024), with a rising proportion of gunshot wounds (2.5% in 2022 to 7.5% in 2024). Median patient age was 38 (IQR 30–47), and the median length of hospital stay was three days (IQR 2–5). Limb injuries (87.8%) were the most common, followed by head (58.5%), thoracic (51.2%), and abdominal injuries (26.8%). ICU mortality rates declined over time, from 6.8% in 2022 to 5.4% in 2024. Prehospital interventions were prevalent, notably intubation (82.9%), tourniquet (65.9%), and damage-control surgery (70.7%).
Conclusion: The study highlights the prevalence of blast-induced polytrauma, emphasizing the importance of prehospital interventions and damage-control surgery in reducing mortality, but shows an evolution of the proportion of gunshot wounds over time. While ICU mortality rates compare favorably with other conflict zones, a declining trend over the years seems to follow the adaptation of therapeutic and logistical procedures. Limitations include the exclusion of prehospital fatalities and challenges in data collection due to major resource and environmental constraints.

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Global Analysis of Military Terrorism: Incidents, Impact, and Trends from 1970 to 2020

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Introduction: Military-targeted terrorism is a persistent global threat that affects national security and stability. This study analyzes the global trends, key perpetrators, and characteristics of terrorist attacks targeting military entities over five decades using data from the Global Terrorism Database (GTD).
Methods: The GTD was utilized to extract incidents from 1970 to 2020, focusing specifically on attacks targeting military entities. Descriptive statistics were employed to identify trends in attack frequency, casualties, and the most active terrorist groups. The study classified incidents by attack and weapon types and assessed the impact across 102 countries and regions. Geospatial analysis was conducted to visualize the distribution of incidents and identify high-density regions using geographic information systems tools.
Results: From 1970 to 2020, there were 5,534 terrorist incidents targeting military personnel, causing 19,971 fatalities and 23,865 injuries globally. Activity showed significant fluctuations, with a notable rise after 2000. The Middle East & North Africa were the most affected region with 1,915 attacks (34.6%), followed by South Asia with 1,534 attacks (27.72%) and Sub-Saharan Africa with 808 attacks (14.6%). The most affected countries were Iraq (3,989 deaths, 5,132 injuries), Afghanistan (3,738 deaths, 4,470 injuries), and Syria (1,707 deaths, 1,709 injuries). Top terrorist groups, including the Taliban and ISIL, were responsible for many of these attacks. Bombings/explosions were the most common attack type, occurring in 3,138 incidents (56.70%), followed by armed assaults in 1,348 incidents (24.36%). Visual clustering identified potential hotspots, such as Baghdad, Mosul, and Fallujah in Iraq; Kabul in Afghanistan; and Maiduguri in Nigeria, with high fatalities.
Conclusion: This study highlights the ongoing and evolving threat of terrorism targeting military personnel. The findings stress the need for improved counter-terrorism strategies and greater international cooperation. By understanding historical trends and attack characteristics, policymakers and military strategists can develop more effective interventions to safeguard military personnel and assets.

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A New Paradigm for Management of Combined Trauma and CBRN Exposure

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Introduction: This presentation proposes an overarching treatment paradigm for the management of trauma patients with simultaneous chemical, biological, and radiological exposure, which has not been explicitly documented in the literature.
Methods: Literature search and expert opinion. (There is a limited body of unclassified work available for reference. Much data is derived from animal studies or inferred from historical events.)
Results: Whether it's another pandemic, a chemical accident or deliberate attack, or a radiological exposure from a dirty bomb or nuclear detonation, trauma patients are increasingly exposed to CBRN. While military physicians regularly plan for these patients, in civilian medicine, trauma and CBRN casualty management are considered separate problems. Decontamination, isolation, and newer treatments all impact the patient and the physician.

Although there is some experience with COVID-19-exposed patients with trauma, this has primarily been with single or small numbers of casualties. Providers wear appropriate PPE,and patients remain in isolation during care. Future pandemic diseases or bio-warfare agents may require higher levels of PPE than were needed during COVID-19. There have been few chemical casualties with combined traumatic injuries in civilian hospitals. Terrorism or warfare with chemical weapons can potentially create large-scale combined casualties.

Nuclear detonation presents the potential to produce the greatest number of casualties with a mixture of explosive injury, burns, acute radiation syndrome, and radioactive contamination. Neither modern civilian hospitals nor military facilities have experience with this level of casualty production. Although it is difficult to prepare for large-scale casualties, having a well-understood plan of action can help improve the medical response. Particularly important is appropriate triage to ensure the optimum distribution of scarce resources while helping the greatest number of casualties possible.
Conclusion: Using available open-source literature and expert opinion, a new scheme for patient flow and management priorities has been proposed.

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Evaluating the Effectiveness of Coronavirus Disease 2019 (COVID-19) Vaccine Against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection and COVID-19 Outcomes in Real-World Clinical Practice During the Pandemic

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Introduction: The coronavirus disease 2019 (COVID-19) pandemic was a global outbreak caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The rapid authorization of mRNA COVID-19 vaccines was a pivotal milestone, addressing an unprecedented global public health crisis. Following Phase III clinical trials, there was a regulatory need for information on real-world vaccine effectiveness (VE) and durability of protection.
Methods: A series of cohort studies and test-negative case-control studies were conducted at Kaiser Permanente Southern California (KPSC) to evaluate the VE of the Moderna COVID-19 vaccine as a regulatory commitment to multiple health authorities globally. KPSC's electronic health record captures comprehensive information on patient care, including vaccinations, diagnoses, lab tests, procedures, and pharmacy records across all care settings. Exposures included the 2-dose primary series, monovalent booster dose, and bivalent dose. Outcomes included SARS-CoV-2 infection, COVID-19 hospitalization, and COVID-19 in-hospital death.
Results: From 2021 to 2024, ten analyses were performed and showed that the vaccine was initially highly effective in preventing infection and severe outcomes. VE against infection declined over time due to waning immunity and emerging immune escape variants. The decline in VE resulted in the need to offer booster doses to the general population, provide additional protection for immunocompromised individuals, and develop variant-specific vaccines. Updated vaccines provided robust protection against severe outcomes, including hospitalization and death, despite variant evolution.
Conclusion: The findings emphasized the importance of booster doses and variant-specific vaccines, particularly as immunity wanes over time and new, more transmissible variants like Delta, Omicron, and their subvariants emerge. The findings were crucial in shaping public health policies, guiding booster recommendations, and ensuring the protection of high-risk populations. Real-world evidence played an essential role in regulatory decision-making during the pandemic, offering valuable insights into the Moderna COVID-19 vaccine performance over time and in diverse populations.

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The Effect of Wildfires on the Rate of Violent Trauma in California

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Introduction: Natural disasters may impact behavior and cause social destabilization. Recent research suggests potential changes in violent trauma rates following natural disasters; however, there is no clear evidence regarding the impact of wildfires. The study sought to evaluate the impact of wildfires on rates of violent trauma in California.

Methods: Data from the California EMS Authority between 2017-2022, following 30 wildfires, was used. Violent trauma totals were calculated within the county of the wildfire incidence. The baseline rate was established two weeks before the fire, the active period expanded from the start of the fire through containment, and the post period extended two weeks post-containment. Multivariable linear regression was performed to compare changes in violent trauma rates and county-level co-variables. Analyses were adjusted for county median income, population, total structural damage, and the county baseline rate.

Results: The baseline, active fire, and post-containment rate of violent trauma per county were 16.2, 16.1, and 13.2 patients per week, respectively. Testing showed no significant difference in the rates of violent trauma during an active wildfire compared to baseline (z=0.495, p=0.62), and following the wildfire versus baseline (z=0.51, p=0.61). Further analysis showed that for every $10,000 decrease in median income, there was an increase in weekly violent trauma by 1.68 cases (95% CI 0.0048,3.31; p=0.049) during the wildfire, and an increase by 0.94 cases (95% CI, -0.32, 2.2; p=0.14) post wildfire.

Conclusion: The findings demonstrate a potential reduction in violent trauma with increased county income, indicating potential disparities in community resilience based on income. Research with a larger population of wildfires is needed to further elucidate the impacts of wildfires and the potential protective factors against fluctuations in violence rates.

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Geographical Distribution and Temporal Analysis of Chemical Weapon Usage in Terrorist Events from 1970 to 2020

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Introduction: Chemical weapons significantly threaten global security and public health by causing mass casualties and fear. Their use has increased recently due to high-profile attacks and evolving terrorism. Understanding these patterns is crucial for developing effective countermeasures and preparedness strategies. This study analyzes the geographical distribution and temporal trends of chemical weapon usage in terrorist events from 1970 to 2020.

Methods: This descriptive observational study draws data from the Global Terrorism Database (GTD) from January 1, 1970, through December 31, 2020. Data extraction focused on incident dates, locations, and regional contexts. Geospatial analysis and temporal categorization were conducted to identify trends and hotspots. Statistical methods included descriptive statistics, GIS mapping, time series analysis, and cluster analysis to detect significant patterns and correlations in the data.

Results: A total of 270 chemical weapon incidents were recorded from 1970 to 2020. The Middle East and North Africa emerged as primary hotspots, with significant clusters in countries such as Iraq and Syria. Notable incidents also occurred in Eastern Europe and Southeast Asia. Temporal analysis revealed significant spikes in the 1980s and 2010s, coinciding with major geopolitical conflicts. Spatial analysis identified major urban centers and conflict zones, such as Baghdad, Aleppo, and Kabul, as focal points for these attacks, highlighting their strategic use in densely populated areas. Specifically, the 1980s saw a significant spike with 50 incidents in the Middle East and North Africa, while the 2010s recorded 100 incidents in the same region.

Conclusion: The findings underscore the critical need for targeted preparedness and response strategies in high-risk regions. Enhanced training for emergency responders, prioritized allocation of resources, and coordinated international policy efforts are essential to mitigate the impact of chemical weapon terrorism. This study provides valuable insights for prehospital and disaster medicine, emphasizing the importance of continuous monitoring and adaptation to emerging threats.

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Impact of Pandemic Control Measures on Orofacial and Non-COVID Respiratory Infections: A Retrospective Analysis of 7,900 Patients

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Introduction: The COVID-19 pandemic had a profound global impact, including numerous indirect consequences on healthcare systems. Acute orofacial infections are prevalent across all age groups. While most of these infections are mild and can be managed without hospitalization, they carry the potential to become life-threatening. Infections in the head and neck regions can spread deeper into the orofacial and neck areas, potentially compromising the airways.

This study aimed to assess the impact of pandemic control measures on orofacial and respiratory infections in oral and maxillofacial surgery (OMFS) and ear, nose, and throat (ENT) emergency units.

Methods: Records of patients with orofacial or respiratory infections based on patient ICD-10 codes diagnosed at the Oral and Maxillofacial Surgery (OMFS) or ENT Emergency Departments of Helsinki University Hospital (HUS), Helsinki, Finland, from March 1st to October 30th, 2020, were reviewed. Data was compared to corresponding periods in 2018 and 2019.

Results: The study included 7,900 patients. There was a significant mean reduction of 37% in infection cases in 2020 compared to previous years (1,894 vs. 2,929 and 3,077, respectively, p<.001). ENT patients were 51% less likely to be admitted to the ward in 2020 compared to previous years (p=.013), and patients from rural areas were less likely to visit OMFS or ENT emergency departments during the 2020 study period compared to 2019 and 2018 (26.8% vs. 29.0% and 30.3%, p=.031).
Conclusion: There was a notable decline in emergency department visits for orofacial and respiratory infections during the COVID-19 pandemic in 2020. These findings provide valuable insight for decision-making during future health crises.

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How Narcissistic Leadership Threatens Global Disaster Preparedness and Sustainable Development Goals

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Introduction: The United Nations' Sustainable Development Goals (SDGs) are essential for addressing global challenges, including disaster preparedness. Narcissistic leadership, marked by self-centered decision-making and a focus on short-term gains, poses significant risks to achieving these goals. This study examines how narcissistic leadership impacts global disaster preparedness and the broader SDGs.
Methods: A systematic scoping review, complemented by action research, was conducted to explore the relationship between narcissistic leadership and disaster preparedness within the context of the SDGs. Searches were conducted across databases like PubMed and Scopus, focusing on peer-reviewed articles that discuss the effects of narcissistic leadership on environmental sustainability, infrastructure, social health factors, and global partnerships.
Results: The review included 47 studies that highlight the detrimental effects of narcissistic leadership on disaster preparedness and SDG achievement. Narcissistic leaders were found to prioritize their personal agendas over long-term disaster resilience, leading to inadequate preparedness measures, environmental harm, and weakened international cooperation. This leadership style also exacerbates social inequalities and disrupts the implementation of effective global health strategies.
Conclusion: Narcissistic leadership is a significant barrier to global disaster preparedness and the successful attainment of the SDGs. Addressing this issue requires urgent global policy reforms, the promotion of collaborative and empathetic leadership, and enhanced international cooperation. Future efforts should focus on mitigating the rise of narcissistic leaders and strengthening leadership practices that support sustainable development and disaster resilience.

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Challenges in the Management of Malathion Poisoning

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Summary: Malathion poisoning is difficult to manage due to its unpredictable toxicity and highly transmissible nature. This case demonstrates the tumultuous patient journey and the importance of appropriate personal protective equipment (PPE).

A 25-year-old previously well man presented to the ED for altered mental status in a postictal state with notable tachycardia. Given pungent secretions, all attending personnel wore gowns, gloves, goggles, and N95 masks. His clothes were removed, double-bagged, and he was wiped down. The toxicology service was consulted and guided subsequent management. He was given IV atropine boluses and pralidoxime infusion. He was intubated in the ED and given activated charcoal via nasogastric tube. He was continued on IV Atropine infusion. The attending ED staff experienced possible side effects of poisoning (lightheadedness and vomiting). The clinical impression was a cholinergic toxidrome, likely organophosphate poisoning. Red blood cell (RBC) cholinesterase levels were low. Blood toxicology revealed malathion. He suffered two cardiac arrests on Days 6 and 8 that coincided with low intravenous atropine infusion rates. He also required reintubation during the second cardiac arrest. RBC cholinesterase levels remained low until Day 13. IV atropine infusion was terminated on Day 13 when the secretions stopped. IV pralidoxime was stopped on Day 14, and he was transferred out of the ICU the same day. He had no neurological deficits when he was discharged to a psychiatric hospital on Day 17.

This case highlights the clinical dilemmas when managing a patient with malathion poisoning concerning safety for extubation, cessation of atropine infusion, and the risks from vagal overstimulation during procedures like intubation and suctioning. Although malathion has low volatility, secondary contamination of staff can still occur due to the presence of volatile hydrocarbons or solvents off-gassing when the patient vomits and during suctioning. Management of these patients can be resource-intensive.

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The Impact of an All-Hazard Mass Casualty Event on Emergency Department Operations: A Retrospective Analysis

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Introduction: Mass Casualty Events (MCI) have a direct and persistent impact on the safety and well-being of an emergency department (ED) and its staff. ED physicians may be faced with the prospect of providing ongoing patient care while simultaneously experiencing direct threats to their health or physical safety. In our study, we considered the unique operational challenges encountered and management strategies adopted by the ED staff and its leadership in response to an all-hazard MCI impacting an academic urban emergency department.
Methods: We conducted a retrospective, observational study of data from a tertiary academic medical center of patients arriving at the ED during a protracted MCI lasting from May 11th to May 21st, 2021. No arriving patients were excluded from the analysis. Patient demographics, ED resource utilization, throughput, disposition, and other pertinent data were considered. An analysis was done of three distinct patient populations, including the event group, a non-event group, and a control group. Descriptive statistics were used to evaluate observational findings.
Results: We reviewed the records of 8,527 total patients presenting to the Shamir Medical Center ED during the event and control periods. Of those, 283 patients were identified as casualties from the MCI, and 3,563 patients were identified as presenting with complaints not related to the event. Our control group consisted of the 4,681 patients who presented in the two weeks before the MCI.
Conclusion: Findings from our observational qualitative study suggested that, in the absence of larger public health interventions, a manmade MCI, with direct threats to an ED and its staff, could force a department to concurrently address the unique clinical needs of two distinct patient populations while simultaneously needing to take measures to protect hospital staff. Additionally, a higher burden of patient volumes and clinical acuity is likely to be encountered by select specialty consult services.

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Cross-Sectional Analysis of Occupational Hazards Awareness in Emergency Medical Services Students: A Regional Study

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Introduction: Healthcare workers, particularly paramedics, face significant occupational hazards that elevate their risk of illness and injury compared to other professions. Factors such as insufficient awareness and inadequate training exacerbate these risks. The study aims to evaluate the awareness of emergency medical services (EMS) students in the Makkah region regarding various occupational hazards, including physical, biological, chemical, and mental risks. By assessing this awareness, the study needs to identify gaps in knowledge and training, ultimately contributing to improved safety protocols and educational programs in the EMS field.
Methods: This cross-sectional study assessed emergency medical services (EMS) students aged 18 to 30 at universities in the Makkah region of Saudi Arabia, excluding those over 30 and other healthcare workers. A survey with five Likert-type questions measured awareness of occupational hazards and information sources, targeting a sample size of 94 students.
Results: Of the 96 participants, 59.4% were male, and 71.9% were aged 21-23. The majority were from King Saud bin Abdulaziz University (67.7%). The mean awareness score was 3.66, with particularly high scores in hand hygiene (4.37) and personal protective equipment (PPE) use, especially for gloves (91.5%) and masks (90.6%). Chemical hazards were the most recognized (78%), while ergonomic hazards were the least known (20.6%). Media was the primary source of information (26.7%), whereas only 18.8% cited lectures and university materials. Education was correlated with increased confidence in PPE usage; however, chi-square tests indicated no significant associations ($p = 0.941$).
Conclusion: The study concludes that while EMS students show good awareness of occupational hazards, there is a critical need for improved training and curricula. Their reliance on the media for information reveals a gap in educational resources. Enhancing training programs and revising curricula could significantly improve safety protocols and preparedness for paramedics in the Makkah region. Future research should assess the effectiveness of these educational improvements.

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Factors Contributing to Health Workforce Absenteeism During Respiratory Virus Pandemics: A Scoping Review

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Introduction: Adequate health workforce capacity is an essential component of disaster and other health emergency response. During a disaster, healthcare workers (HCWs) may be unwilling or unable to respond due to various factors. This study aims to identify factors that can be modified and solutions that can be formulated to support HCWs.
Methods: A scoping review was conducted according to the Arksey and O'Malley framework and PRISMA-ScR guidelines. The search strategy included eight databases, which were searched from 1998 to July 19, 2022. Pandemic or pandemic-prone respiratory virus outbreaks in the last 25 years, defined by the WHO, were included. Two independent reviewers conducted the study selection and data extraction.
Results: 37 studies were included. There was heterogeneity in design, population, and included absenteeism causes and

measures. 22 studies identified potential predictors. These include individual factors, including demographics, professional cadre, seniority, occupational exposure risk, personality trait, perceived stressors and mental well-being, and concern for personal or family illness, that may predict their likelihood of absenteeism. Ecological factors were also identified that may correlate with the magnitude of absenteeism seen at a workforce level. These included the type of clinical department or hospital, community, and hospital pandemic infection rates, and certain response measures, such as HCW testing rates, availability of personal protective equipment (PPE), staff vaccinations, and public health restrictions on community movement and activities.

Conclusion: Building on the potential absenteeism predictors, factors, and mitigation strategies scoped in this review, further research will be essential to develop valid models for predicting absenteeism rates and to establish effective mitigation strategies, which will allow for preventive and anticipatory actions to safeguard workforce capacity.

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Full-Scale "Intruder-Attack" Exercises in Secondary Schools: A 2022- 2024 Toulouse Experience

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Summary: Since 2015, at the request of the Ministry of Education and the Interior, all schools have been required to organize an internal "intrusion attack" exercise to test their PPMS. Under the guidance of the Haute-Garonne prefecture, one or two full-scale interdepartmental "attack-intrusion" PPMS drills are organized in parallel each year. Between November 1, 2022, and December 31, 2024, 2644 students aged between 11 and 19 took part in the exercises, along with 207 teachers and 220 non-teaching staff. A few days in advance, parents and school staff are informed of the date of the exercise, which will take place on a closed site. Arrangements for the participation of children with special needs are specified. There is no communication to the general public on this subject. The scenario involves an armed intrusion into a school, resulting in several casualties. The first part of the exercise consists of playing out, in real life, the response and coordination of services (school, law enforcement, and first aid). The second part is a tabletop exercise that tests the coordination of the various psychological support services during this intrusion. If required during the exercise, players can be taken in charge by these services. The 3rd part allows a defusing of the exercise, followed by an exchange between the students and staff of the school and the state services, to present the missions of each and the equipment used during the exercise. The exercises led to improvements in the implementation of the PPMS in the establishments tested. No adverse events have been reported to date.

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Field Report on a Submarine Disaster Mass Casualty Exercise

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Summary: The loss of the Indonesian submarine KRI Nanggala in 2021 and the commercial Titan Submersible in 2023 highlight the importance of preparedness for Submarine disasters. As a Submarine operating navy with Submarine Rescue (SR) capabilities, the Republic of Singapore Navy (RSN) regularly exercises its SR capabilities to maintain this edge. The Medical Flotilla (MedFlot) is tasked with the medical response component of RSN's SR capability.

Quarterly component training is conducted for all medical personnel. However, there was no opportunity for the entire 37-member medical team to exercise a Submarine Disaster Mass Casualty Scenario (SMASHEX) between 2020 and 2023 due to COVID-19 restrictions. This paper focuses on the lessons learned from conducting MedFlot's first SMASHEX since 2019.

Conduct of Exercise:

SMASHEX was conducted over a single day in April 2024. Two serials of 10 casualties each were simulated; The first serial simulated casualties rescued directly from the Submarine via a submersible rescue vehicle, while the second serial simulated casualties who had escaped from the distressed submarine in Submarine Escape Immersion Equipment (SEIE) suits.

After-Action Reviews (AARs) were initially conducted in small groups before being held in a larger group setting that involved the conducting team, simulated casualties, and participants. Feedback was initially wholly qualitative in nature.

Feedback highlighted that existing processes were robust. However, a proactive approach surfaced several areas for improvement: i) Triage processes; ii) casualty tracking; iii) medical team communications; iv) familiarity with equipment and processes for casualty movement.

As with other areas of disaster preparedness, the onus falls on organisations with SR capabilities to regularly exercise, evaluate, and improve their Submarine disaster response processes. Future efforts to improve training and evaluation in this realm should involve the use of quantitative markers for benchmarking and tracking.

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Technological Sabotage and Its Medical Fallout: Lessons from Lebanon's Pager Explosions

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Summary: On September 17, 2024, a coordinated series of pager and walkie-talkie explosions targeted thousands of members affiliated with a prominent political party across Lebanon.

The blasts resulted in 2,800 injuries and 12 fatalities, with nearly two-thirds of the injuries affecting the face, eyes, or hands.

The Lebanese American University Medical Center (LAUMC) treated 38 injured individuals, of whom 36 were admitted as inpatients, and 13 of them required care in the Intensive care unit. Surgical intervention was needed for 33 patients, with 32 suffering finger amputations, 31 presenting with eviscerated eyes, and 17 experiencing combined eye and hand injuries. This intentional mass casualty event overwhelmed healthcare infrastructure, as the unprecedented pattern and severity of injuries created an urgent demand for ophthalmological and orthopedic expertise.

The incident highlights the growing need to understand and prepare for the medical impacts of hybrid warfare, where non-traditional and unconventional tactics, such as technological sabotage, can generate large-scale civilian casualties. It also exposed critical gaps in disaster preparedness, underscoring the need for hospitals to reassess their mass casualty protocols, establish targeted training programs, and conduct regular preparedness drills.

Lessons from this event emphasize the importance of maintaining robust emergency response systems capable of addressing large-scale, unconventional threats and injury patterns.

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Wayanad Landslide - Lesson Learned

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Summary: On July 31, 2024, a deadly landslide in Wayanad, Kerala, India, occurred following continuous rainfall. Wayanad is situated in the Western Ghats, with lush green hills, dense forests, beautiful landscapes, and scenic waterfalls. Choormala and Mundakkai villages in the Wayanad District were hit by a landslide, which devastated the villages. Debris traveled 8 km along the local river, altering its course, causing a break in the bank, and destroying buildings and homes along the riverbanks and in villages.

The landslide caused 420 deaths, 397 injuries, and 118 people are still missing. The Wayanad Landslide was triggered by heavy rainfall and seismic activity. This sets the stage for disaster, as significant deforestation of tea plantations causes them to have a slope of 20 degrees. This increased the risk of flash floods during the rainy season. The leading causes of this are deforestation, seismic sensitivity, poor building construction, increasing population, urbanization, industrialization, increased traffic, and increased global warming. A massive landslide after torrential rain caused flash floods, a breach, and a massive landslide, bringing in mass devastation. Local villages, the Army, and the National Disaster Response Force all contributed to the rescue efforts and continue to assist in the rehabilitation.

The primary cause of the Wayanad Landslide was heavy rainfall, deforestation, and unstable soil. Major triggering factors include monocropping, illegal construction, global warming, climate change, increased greenhouse gases, and the use of fossil fuels. A decrease in global warming, deforestation, overconstruction, and help with research for climate change will help avoid this in the future. Active research is being done in India via the Kerala Disaster Management Authority, under the NDMA. Cochin University is also researching the causes of landslides and how to prevent them in the future.

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A Study on the Prediction of the Expiration Date of Antidotes for Poisoning Substances Used in Chemical Terrorism

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Introduction: Stockpiling antidotes and therapeutics is required in cases of CBRNE terrorism. However, there have been no studies on an appropriate stockpiling system and the cost of stockpiling antidotes. Therefore, the speakers focused on the expiration date of the antidote, estimated the expiration date from the results of the accelerated test of the antidote, and examined the optimization of the running stock.

Methods: The accelerated test is a method in which the rate of change is measured in a short period of time under high temperature conditions, and the stability under normal storage conditions is predicted based on the measurement results. In this study, we speculated on the stability of various antidotes if the drug changes only by chemical reactions and the temperature dependence of its rate follows the Arrhenius equation. A gas multiplier [R] = 8.3144621 J/(K·mol), temperature [T] = 273 K, and activation energy [E] = 92466.4 J/mol were used in the calculation.

Results: The subjects were administered atropine sulfate, pralidoxime iodide, diazepam, hydroxocobalamin, dimercaprol, penicillamine, Prussian blue, methylene blue, and fomepizole. Extrapolating the results of the accelerated tests of various antidotes to Arrhenius' equation, it was estimated that atropine sulfate had a shelf life of 3.1 years, pralidoxime iodide for 3 years, diazepam for 3.5 years, hydroxocobalamin for 3 years, dimercaprol for 12.6 years, penicillamine for 4.5 years, Prussian blue for 3 years, methylene blue for 3 years, and fomepizole for 5 years.

Conclusion: We focused on accelerated testing of various antidotes and predicted the long-term stability of the products. As a result, the titer was estimated to be maintained within three years. Based on these findings, the cost of stockpiling antidotes used in emergencies can be suppressed by adjusting the rolling stock period of various antidotes.

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Modification of the UNDRR Scorecard for Assessment of Nuclear Disaster Preparedness, A Case for the Modifiability of the UNDRR Disaster Resilience Scorecard to Study Specific Disasters

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Introduction: The UNDRR Disaster Resilience Scorecard for Cities is a known tool that was developed for local governments to evaluate their resilience to disasters. In this review, we examine the case where a modified version of the scorecard was used to assess resiliency to nuclear disasters, and the potential for further modification of the scorecard to better assess specific stressors on a healthcare system.
Methods: Utilizing a modified Delphi approach with nuclear and radiation experts from the US and Israel, the UNDRR Scorecard was modified to assess resiliency to a nuclear disaster. Once modified, the scorecard was distributed to local government officials, nuclear and radiation specialists, and public health and healthcare personnel utilizing Qualtrics software. A post-scorecard survey was provided for feedback on how the scorecard could further be improved and refined to achieve its stated objective. Small changes were made after consideration of the feedback from the same committee of experts that initially modified the scorecard.
Results: Early results have identified strengths and weaknesses within local governments and health systems that can be used to strengthen the response to a nuclear disaster. Most recently, the scorecard was used at a workshop for nuclear safety in Montgomery, Alabama, and received positive feedback. Modifications continue to be made from post-survey feedback after approval of the expert committee.
Conclusion: The scorecard has been a useful tool in defining the baseline preparedness and estimating the resilience of local governments and health systems to disasters. In Montgomery, Alabama, the scorecard helped identify important action items for the community to focus on to improve their community's resilience to nuclear disasters. This case in modification of the UNDRR utilizing this approach shows promise that, with a structured approach, the UNDRR disaster resilience scorecard can be modified to further improve a community's resilience to specific disasters.

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Impact of Vial Shortage on Blood Culture Testing in Hospitals: Assessing Resilience to Logistics Disruptions in the Healthcare System

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Introduction: Securing medical supplies is crucial to healthcare system security. On June 11, 2024, Becton Dickinson, a major supplier of blood culture vials, reported supply delays, and health authorities issued guidelines to reduce the use of these vials. To assess resilience to logistics disruptions, this study investigates how this vital shortage affected the implementation of blood culture testing in Japanese medical institutions.
Methods: The data source was the DPC (Diagnosis Procedure Combination) database from October 2021 to September 2024, obtained from hospitals participating in the Quality Indicator/Improvement Project (QIP) of Kyoto University. This dataset includes all records of medical procedures performed in the participating hospitals, including blood culture testing. An Interrupted Time Series Analysis (ITSA) was conducted to assess the effects of the vial shortage and usage reduction recommendations on blood culture testing.
Results: A total of 886,511 blood culture test opportunities from 142 acute care hospitals were included and analyzed. The number of blood culture tests performed reduced to 88.2 % (95% CI: 86.8%-89.6%) after the supply shortage announcement in Japan. The decline was more pronounced in outpatient settings and small hospitals with less than 199 beds (first quartile), with reductions to 77.2 % (74.1 %-80.4 %) and 69.5 % (61.6%-78.5%), respectively. These results are provisional, as data collection is still ongoing.
Conclusion: The supply shortage significantly impacted blood culture testing in Japan, particularly in smaller hospitals, which may be more vulnerable to supply disruptions. Further research is required to understand how this decrease in blood culture testing affects patient outcomes, particularly for those with infectious diseases. Understanding the patterns of practice change could provide valuable insights for mitigating future supply crises.

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Development and Evaluation of a Traceability and Monitoring Tool for Personnel Engaged in Contaminated Zones During a Nuclear and Chemical Event (RN)

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Introduction: The study aims to evaluate a personnel traceability tool based on QR codes in a contaminated zone during a nuclear and radiological (RN) event.
Methods: A prospective, monocentric study was conducted to assess an IT tool using QR codes linked to individual identities, attached to uniforms and wristbands, utilizing a spreadsheet created with Microsoft® Office Excel. The QR codes were

scanned by a reader connected to a computer at the single entrance and exit of the zone. Color codes indicated the duration of presence in the contaminated zone. To evaluate the tool, similar information was recorded manually. A satisfaction questionnaire regarding the speed of registration and tracking in the zone was administered at the end of the exercise. Results are expressed in counts and percentages, as well as mean ± standard deviation, with $p < 0.05$ considered significant for satisfaction comparisons using a Wilcoxon rank test.

Results: No software malfunctions were reported. Satisfaction among the 25 participants was assessed on a scale of 10, with a score of 9 for the QR codes compared to 7.6 for manual registration and 7.2 for personnel tracking in the zone.

Conclusion: In conclusion, this tool demonstrates its utility and effectiveness in managing a significant number of healthcare providers during an RN event. The interconnected use of this software by various services could reduce delays in the contaminated zone.

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Effectiveness of Two Rapid Scores in Predicting the Mortality Risk of Coronavirus Disease 2019 (COVID-19)

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Introduction: Some studies have indicated that a range of Early Warning Scores, encompassing the Standardized Early Warning Score(SEWS), National Early Warning Score(NEWS), National Early Warning Score 2(NEWS2), and Hamilton Early Warning Score(HEWS), hold potential as screening instruments for predicting mortality risk in coronavirus disease 2019(COVID-19) patients. Given the urgent need to quickly assess disease severity at admission, this study aimed to evaluate the effectiveness of two rapid scoring
Methods: the Quick Sequential Organ Failure Assessment(qSOFA) and Rapid Emergency Medicine Score(REMS).

Methods: This study collected 127 study subjects and their data through systematic records of the wards from March 7 to April 7 in 2020 to calculate qSOFA and REMS, and drew the receiver operating characteristic(ROC) curve to analyze and compare the predictive effectiveness of REMS, qSOFA, NEWSand HEWSbyusing SPSS25.0.

Results: There were 110(86.6%) patients alive out of the 127 patients, and the average ages of the survivors and non survivors were 59.08±14.87 and 75.29±12.78 years. The AUCs of REMS, qSOFA, NEWS, and HEWS were 0.826, 0.700, 0.774, and 0.764, respectively.

Conclusion: This study concluded that REMS was the most effective scoring system among the evaluated tools, with qSOFA also demonstrating acceptable predictive performance. These findings suggested that REMS and qSOFA could be valuable in rapidly assessing disease severity and predicting mortality risk in COVID-19 patients upon admission.

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The Effect of Flash Floods on the Rate of Violent Trauma in Texas

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Introduction: Increase in temperature and natural disasters may have impacts on individual behavior and cause social destabilization; however, there is no clear evidence regarding the impact of flash flooding. The study sought to evaluate the impact of flash floods on rates of violent trauma in Texas.

Methods: Data from the Texas EMS Registry between 2018-2022 following 16 flash floods was used. Violent trauma totals were calculated within the county of the flash flood incidence. The baseline rate was established two weeks prior to the flash flood, and the post period extended two weeks post flood. Multivariable linear regression was performed to compare changes in violent trauma rates and county level covariables. Analyses were adjusted for county median income, county population, county social vulnerability index (SVI), total cost of damaged property, and the county baseline rate.

Results: The baseline and post-flood median rate of violent trauma per county was 14.5 and 13.5 cases per week, respectively. Baseline violent trauma rates were positively correlated with county population (r=0.76), and increased SVI (r=0.53), and negatively correlated with increased income (r=-0.30). Testing showed no significant difference in the rates of violent trauma in the post-flash flood group compared to baseline (z=0.547, p=0.5843). Further analysis showed that for every $10,000 decrease in median income, there was an increase in weekly violent trauma by 2.67 cases (95% CI -0.87, 6.21; p=0.12) post flash flood.

Conclusion: The findings demonstrate a positive correlation between the social vulnerability index and baseline rates, and a negative correlation between county median income and baseline rates. The findings also show a potential reduction in violent trauma in counties with higher income, indicating potential disparities in community resilience. Research with a larger population of flash floods is needed to further evaluate the impacts of flash floods and the potential protective factors against fluctuations in violence rates.

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Right Wing Extremism

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Introduction: Right-wing (RWX) and left-wing extremists (LWX) constitute ideologically motivated violent extremism (IMVE), a term used to describe what was previously known as "domestic terrorism". Of most concern has been the rise of RWX.

In 2021, for the first time, the Australian Security Intelligence Organisation (ASIO) declared that RWX constituted fifty percent of its priority caseload. The United Nations Security Council Counter-Terrorism Committee reported a 320 percent increase in RWX globally from 2016 to 2021.
Methods: A review of the gray and published literature was undertaken to determine the underlying causes of this rise in RWX.
Results: Across the Anglosphere, in Europe, Asia, and elsewhere, transnational trends are fuelling individual grievances and resentments, funneling people into RWX movements.

There are several reasons why RWE has increased.

Since the 1980s, most countries have experienced rising inequalities in wealth. Globalization and the accompanying rise in inequality are key structural elements driving RWX.

Global inequality also feeds into extreme-right conspiracy theories about a corrupt global cabal that wants to create a 'New World Order' – a far-right conspiracy theory which claims that a powerful but secret global elite aims to take over the world and establish a global dictatorship.

Disinformation and misinformation are so rife that specialists had to come up with a new field of study – infodemiology.

Ecofascism. Eco-fascists blame the 'capitalist class' and corporate elites for the degradation of the environment.

Perceived threat to identity defined by ethnic, racial, or national status.

Global migration and COVID-19 are amplifiers of RWX
Conclusion: There is no doubt that the world has undergone profound stress and upheaval this century: environmental crisis, a global financial crisis, and a global pandemic. In periods of social, political, and economic uncertainty, extremism can grow, and the disaffected can be recruited into these movements.

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Skin Decontamination in Real-World Incidents: A Scoping Review

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Introduction: Skin decontamination is lifesaving for patients and an essential safety element of critical systems. However, its application varies widely, with scarce patient and system outcomes limited to individual reports. This scoping review explored methods, outcomes, and lessons learned from real-world skin decontamination.
Methods: Pubmed, Embase, and CINAHL databases, and gray literature were searched for articles on real-world skin decontamination of chemical, biological, radiological, or nuclear casualties. References and citations from included manuscripts were manually searched. Details of incidents, casualties, setting, and method of decontamination, casualty and system condition pre- and post-decontamination, and lessons learned were extracted using a predefined form and summarized.
Results: Of 1,496 articles found, 954 were screened. Of 95 articles to be assessed for eligibility, 16 published after 2020 were evaluated, and four were included in this interim report. All were case reports describing single casualties from isolated incidents, with one reporting eight healthcare workers undergoing decontamination (n=13). The dermal contaminants were organophosphate (casualty n=9), sulfuric acid, fentanyl, and lidocaine. The decontamination agents were soap and water in the three former contaminations and unspecified for lidocaine. Pre-decontamination primary casualty conditions included hypoxia and drowsiness in organophosphate, sulfuric acid, and lidocaine contamination, with improvement post-decontamination in the latter. All patients recovered fully and were discharged from the hospital. Personal protective equipment (PPE) included gloves and gowns, with no respiratory protection specified. Eight healthcare workers were secondarily exposed to organophosphate, including one with severe symptoms requiring atropine and pralidoxime. Lessons learned were the low risk of organophosphate secondary contamination and the prolonged half-life of transdermal lidocaine.
Conclusion: This scoping review summarized real-world skin decontamination using soap and water for common chemical contaminants with favorable outcomes. Contaminant-specific considerations like secondary exposure and pharmacokinetics can inform PPE and toxicological treatment. A further 79 articles will be assessed for a full report.

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Radiological Emergency Preparedness- an Analysis of Interviews With Israeli Experts

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Introduction: Radiological and nuclear emergencies can occur as a result of a nuclear facility accident/attack, due to mishap while working with or transporting nuclear materials, and due to intentional attacks with improvised or military-grade nuclear devices or with radiation dispersal devices, "dirty bomb." While rare, such incidents present significant challenges to healthcare providers in the pre-hospital and hospital arenas. As part of a collaborative research project, data-driven recommendations regarding the required medical and emergency agency preparedness were sought.
Methods: An initial research stage included interviews with three leading Israeli experts on radiation/nuclear risk assessment and preparedness. The two lead Israeli researchers conducted these. The interviews were conducted with predefined open-ended questions and analyzed using qualitative research methods.
Results: The three subject experts included: A former head of the Israeli Atomic agency, a senior advisor to the Israeli Ministry of Health on hospital emergency management and CBRNE, and the Israeli national EMS CBRNE specialist. Major themes identified in these interviews included: differences in risk assessment between the U.S. and Israel, with the Israeli experts focusing on the risk of a radiation dispersal device attack on a stadium,/mall, or a strategic facility. The experts stressed that even a low casualty event of this type might have far-reaching psychological and economic repercussions. Prehospital and hospitals must prepare for a high number of worried-well and public panic. All emphasized the importance of first responder training and radiation identification capacities. Two pointed to the importance of risk and event communications targeting the general public and healthcare personnel.
Conclusion: Experts from three levels: the national level tasked with risk assessments and national preparedness guidelines, the Ministry of Health and hospital preparedness management, and national EMS CBRNE management. Similar themes were identified regarding risk assessment, major challenges, and required interventions.

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CBRNE Disaster Simulation Exercise Should Be Performed by "Highly Probable and Realistic Training Scenario"

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Summary: CBRNE disasters cause severe social disruption and require a special medical response. The Center has prepared a CBRNE disaster response manual in advance of the 2019 Rugby World Cup in Kobe. The Center has similarly held several table-top drills in the neighborhood of the city center to simulate a terrorist attack, but the number of participants was about 20-30 people each time. Therefore, an exercise scenario of multiple patients injured by an accident at a nearby chemical plant was proposed. Before the exercise, a series of study sessions were practiced to deepen the staff's understanding of CBRNE, including an outline of CBRNE, decontamination tent set-up, and so on. A scenario was developed in which multiple walk-in patients, after dermal or inhalation contamination by chemical agents, collapsed at the hospital entrance, and the initial response was made by multi-professional staff, including a reception clerk, ER nurses, and physicians. On the day of the drill, more than 70 people participated. In the post-drill questionnaire, there were many favorable comments on the drill itself. Many of the participants requested that the next training should be based on an explosion, which could occur in a neighbor's. As for CBRNE disasters, especially chemical disasters, there have been no mass casualties from terrorist attacks in Japan since the two Sarin gas incidents in 1994 and 1995. On the other hand, chemical disasters such as suicides, accidents, and factory disasters while using toxic agents occur routinely; if the number of the injured/contaminated was too large, or the cause was a terrorist attack in the simulation scenario, participants could hardly view it as realistic. In this CBRNE disaster drill, we believe that the use of "highly probable and realistic training scenarios" raises the sense of urgency and attracts more staff.

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Beware the Burn – A Case of Sodium Hydroxide Chemical Burn

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Summary: A 26-year-old male patient presented to the Emergency Department with chemical burns sustained at his workplace, reportedly from 4% Sodium Hydroxide exposure. Despite wearing full personal protective equipment (PPE), including a body suit, goggles, boots, gloves, and a hood, the patient experienced contact burns on his forehead. Immediately following the exposure, he initiated workplace decontamination procedures, rinsing his suit and irrigating the affected area before seeking medical attention.

He presented with persistent forehead pain without visual symptoms. Initial examination was conducted, there was an erythematous area of 4x2 cm over the central forehead, two smaller sub-centimetre brown spots above his left eyebrow, and the glabella. The eye examination was normal. The patient received continuous irrigation with normal saline until pH normalization, and the burns team was consulted. During treatment, physicians recognized a pattern consistent with prior cases involving similar injuries, which prompted further inquiry. Upon subsequent questioning, it was revealed that the chemical spill incident involved multiple index casualties, who had presented separately to the emergency department throughout the day. Both the patient and his coworker, involved in the chemical spill cleanup, were unaware of additional casualties and had chosen not to disclose specific details, including the company's name. The link was made through address correlation. All

patients were treated conservatively, discharged without complications, and had uneventful follow-ups.

This case underscores the crucial management of early decontamination and burns management. Proper workplace protocols for PPE use are also paramount. The coordination of responses via a safety manager and proper communication through national networks is also key to ensuring a timely response and appropriation of resources. Finally, the critical need for clinicians to maintain a high index of suspicion in potential mass workplace incidents, particularly when patients may withhold details due to confidentiality concerns or limited awareness.

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Event-based Surveillance for All Hazards from the UK to the World: UK Health Security Agency (UKHSA) Global Hazard Weekly Bulletin (GHWB)

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Summary: The UK Health Security Agency (UKHSA) has provided the Global Hazard Weekly Bulletin (GHWB) since 2012 to contribute to event-based surveillance (EBS) for all hazards. EBS is the organized and rapid capture of information about events that are a potential risk to public health (WHO 2008).

A total of 445 bulletins were produced and released from October 8, 2012, to November 8, 2024. In accordance with GDPR, which governs the personal data of individuals, registration to receive the bulletin indicates that 20,741 subscribers (as of November 8, 2024) can now access this resource. The definition of 'hazard' is 'a process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation' and that has had a significant human impact, adopted by the United Nations General Assembly in February 2017.

Each week, the GHWB team members work to identify hazardous events and disasters that have had a significant human impact that have occurred in the preceding seven days, which is collaboratively compiled and sent by UKHSA once a week with information collected from a variety of sources, including international media outlets, peer-reviewed literature, and reports from international organizations including United Nations (UN).

The process of compiling, analyzing, and reviewing articles for inclusion in the bulletin has benefited the responsible team. The current team consists of members from several different teams across UKHSA, some of which are not focused on global hazards. Generating the GHWB provides some members of this group with the opportunity to enhance their understanding of the global hazards landscape. In addition, the process allows for the review and testing of the UNDRR/ISC Hazard Information Profiles (2021), which are currently being updated for the Global Platform for Disaster Risk Reduction in June 2025.

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Hurricanes Francine and Ida: An Evolution of Emergency Medicine Residency Response to Hurricane Activations

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Summary: Prior disasters directly inform planning and implementation for subsequent disasters. The Louisiana State University New Orleans Emergency Medicine Residency has planned and implemented a hurricane response protocol, "Code Grey," for multiple storms. Hurricane Ida made landfall as a Category 4 Hurricane in 2021, followed by Hurricane Francine, a Category 2 Hurricane, in 2024.

Hurricane Ida exposed multiple areas for improvement in the Code Grey protocol. Following Ida, given post-storm discussions and resident feedback, an after-action report was created. These identified areas of improvement include the following: (1) resident Code Grey assignments and scheduling, (2) timing of Code Grey activation, (3) expectations for those who evacuate and coordination for safe return into the city, and (4) communication from program leadership.

The details of Francine's planning and protocol were a direct response to those identified areas of improvement. Since Ida, protocols at both the hospital and residency levels have been updated to reflect lessons learned. Assignments for the 2024 Hurricane season included updated rules for pregnant residents and those currently on vacation or off service rotations. Direct resident communication began earlier and more frequently, continuing throughout the storm and beyond. This allowed residents to decide whether to evacuate or shelter in place and prepare for their specific assignments/roles during the storm.

Communication included program recommendations on preparation, safety, and expectations, as well as Code Grey timelines and planning. Additionally, a Hurricane Handbook was created for incoming interns and current residents to help familiarize them with personal hurricane preparation, storm safety, and explicit evacuation guidelines. These guidelines include the distance to travel from the city, methods of travel, and expectations of when and how to return. While in turn, Francine exposed further areas of improvement and will inform future responses, lessons learned from Ida improved Code Grey preparation and implementation for current residents.

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Health System Preparedness for Nuclear and Radiological Disasters: A Scoping Review

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Introduction: To support the needs of current research applications for healthcare and public health preparedness and response for radiological and nuclear disasters by providing an up-to-date scoping review of current literature in the field.
Methods: A systematic literature search using four databases to identify articles on topics such as "radiological emergency preparedness," "nuclear disaster medicine," "nuclear terrorism," "CBRNE," and "radiological decontamination" produced 293 articles, of which 96 met the extraction criteria. The articles were evaluated, and the findings were summarized into 7 themes addressing medical and healthcare preparedness for nuclear and radiological events.
Results: The scoping review generated evidence supporting and defining various measures healthcare and government entities can take to improve nuclear and radiological disaster readiness and responsiveness in health systems. Strengthening preventive measures and policies, prehospital and hospital mechanisms, training and education, regional collaboration, communication, and infrastructure support were the main gaps identified.
Conclusion: The literature concluded that the inadequacies of modern health care systems' radiological disaster preparedness were an overarching concern. It identified the major challenges and proposed solutions for public safety to the growing threat of radiologic disasters.

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Frontline Readiness: The Impact of Educational Interventions on High-Consequence Infectious Disease (HCID) Exposure, Knowledge, and Willingness Among Medical Professionals in the Post-COVID Era

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Introduction: Global connectivity increases the risk of infectious disease spread. Frontline healthcare workers' knowledge and preparedness are crucial. HCIDs pose unique challenges due to high mortality and widespread impact. This study examines the current state of resident physicians' knowledge on HCIDs as well as their comfort and willingness to provide care before and after specialized training.
Methods: The study involved emergency medicine learners using a pre- and post-survey design to assess their knowledge and comfort with HCIDs. Participants attended a 30-minute lecture on HCIDs, followed by a hands-on simulation with high-level PPE. The post-survey measured changes in their understanding and comfort after the interventions.
Results: Most participants were emergency medicine residents. 32% had HCID training, 45% PPE training, 35% treated HCID patients, and 48% participated in a drill. Before education, 25% believed PPE would limit care, 38% knew where to find equipment, and 67% knew where to find HCID resources. After the simulation, these numbers increased to 79%, 58%, and 97%, respectively. Confidence in HCID knowledge rose from 2.3 to 3.6, ability to identify risk factors from 2.8 to 3.8, and preparedness from 2.5-3.0 to 3.8. Comfort in determining PPE for COVID was highest, with a 1.4-1.6 point increase for Ebola and Marburg. Biocontainment PPE tasks were rated moderately difficult.
Conclusion: Education and simulation significantly improved emergency medicine residents' knowledge and preparedness for handling HCIDs. Post-simulation, there was a notable increase in the belief that PPE would limit patient care, awareness of equipment locations, and access to HCID resources. Confidence in identifying risk factors, symptoms, and preparedness for HCID care also saw substantial gains. Comfort in determining PPE for COVID remained the highest, with marked improvements for Ebola and Marburg. Overall, training effectively enhanced participants' readiness and confidence in managing HCID scenarios, highlighting the importance of continued education and simulation in emergency medicine.

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The Prevalence and Impact of Global Terrorist Attacks on Police Forces from 1970 through 2020

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Introduction: Terrorist attacks on police forces are a global concern, particularly in South Asia, the Middle East, and North Africa. This study analyzes the frequency, methods, and consequences of these attacks toward police forces using the Global Terrorism Database (GTD), aiming to inform effective counter-terrorism strategies.
Methods: Data was extracted from the GTD for incidents from January 1, 1970, to December 31, 2020. The analysis included attack frequency, geographical distribution, casualties, attack methods, perpetrators, and yearly trends. Incidents meeting GTD's terrorism criteria, excluding state terrorism, were included. Ambiguous or partially qualified events were excluded.
Results: This study analyzed a total of 26,128 police-targeted terrorist incidents. The highest number occurred in South Asia (n = 10,417, 39.9%), followed by the Middle East and North

Africa (n = 6,973, 26.7%). The most common attack methods were bombings/explosions (n = 11,172, 42.8%) and armed assaults (n = 9,033, 34.6%). Afghanistan reported the highest number of incidents (n = 5,367, 20.5%), followed by Iraq (n = 3,942, 15.1%), India (n = 2,449, 9.4%), and Pakistan (n = 1,944, 7.4%). Total Fatalities was 61,565 and Total Injuries was 72,687. The mean number of fatalities and injuries per incident were 2.43 and 2.96 respectively. Syria had the highest mean number of police casualties per incident, with 7.95 deaths and 9.36 injuries. The most frequent perpetrators were unknown assailants (n = 11,289, 43.2%) and the Taliban (n = 2,513, 9.6%). Trends show a high peak in the mid-2010s, with the highest in 2014 (n = 2,591, 9.92%).

Conclusion: Police forces are high-risk targets for terrorist activities, especially in unstable regions. High casualty rates in countries like Afghanistan and Iraq highlight the need for enhanced protective measures and support systems for police personnel. Effective counter-terrorism strategies must consider regional prevalence and attack methods to reduce risks and improve responses.

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A Scoping Review on Health Workforce Absenteeism Rates During Respiratory Virus Pandemics

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Introduction: In the last 25 years, health systems have had to respond to a large number of pandemic or pandemic-prone respiratory virus outbreaks (i.e., SARS 2002, H5N1 2003, H1N1 2009, MERS 2011, H7N9 2013, COVID-19 2019). These outbreaks have impacted the ability of the health workforce to come to work and the surge capacity of the health system. It is important to measure the pattern of absence in these outbreaks to plan for future pandemics.

Methods: A scoping review was conducted according to the Arksey and O'Malley framework and PRISMA-ScR guidelines. The search was limited to publications from 1998 to July 19, 2022. The search strategy included eight databases. Study selection using pre-defined criteria and structured data extraction was conducted by two independent reviewers with final consensus.

Results: Of the 2099 studies identified, 37 were included. There were 26 studies on COVID-19, 10 studies on H1N1 (2009), and 1 study on MERS (2011). The majority were cohort studies (n=24), and self-reported surveys of health care workers (HCWs) (n=12). The majority of the reported absenteeism rates were not standardized, and included the total number of absence days (n=12), number of new absence episodes (n=9), proportion of HCW absent per day (n=6), and excess pandemic absences (n=17), etc. The proportion of HCWs absent per day ranged from 9.1% to 25.1% during COVID-19 (from 3 studies) and 1.45% to 43% during H1N1 (from 3 studies). After standardization, the median was 0.7 new absence episodes per 100 HCW per week (range 0.2 to 29.1) (from 4 studies), and 15.3 days per 100 HCW per week (range 4.7 to 126) (from 10 studies).

Conclusion: Health workforce absenteeism is a significant issue that must be considered in pandemic planning and response. Future research should be reported in a standardized fashion to allow meaningful comparisons between health facilities.

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Downstream Effects of Armed Conflict on Civilian Inter-Hospital Transfer: A Single-Center Study from Israel After October 7, 2023

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Summary: Inter-hospital transfers play a critical role in mass casualty events. On October 7, 2023, 3,000 Hamas terrorists invaded Israel from Gaza, killing 1,200 and injuring 1,455, triggering an ongoing military conflict. In routine times, Israel's smallest hospital, Yoseftal Medical Center (YMC) in Eilat, transfers complex patients to the closest tertiary care hospital, Soroka Medical Center (SMC) in Beer-Sheva. However, this hospital was also closest to Gaza and began receiving injured soldiers. The war initially resulted in a disruption of inter-hospital transfer patterns, where patients routinely transferred from YMC to SMC, were sent to a hospital further away, Hadassah Medical Center Ein Kerem (HMC-EK), in Jerusalem.

The objective of this study is to describe the downstream effects of armed conflict on inter-hospital transfers. Data on patients transferred from YMC to HMC-EK from January 1, 2022 - January 2, 2024, was collected retrospectively from the HMC centralized administrative database. During the study period, all 21 patients transferred from YMC to HMC-EK, arrived after October 7, 2023. The mean age was 61.8 years (± 14.4) and 76.2% were male. Most (n=10, 47.6%) arrived in October with decreasing percentages in November (n=9, 42.9%) and December (n=2, 9.5%). The majority of patients were treated by cardiology specialists (61.9%). During an ongoing military conflict or disaster, hospitals that receive secondary transfers of patients in need of more

advanced care than locally available may be overwhelmed. Further studies of the downstream effects of MCEs and disasters on inter-hospital transfers and ED utilization should be conducted to help develop protocols to improve patient care during these events.

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Disaster Medicine, Global Health, and Innovative Technology

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Summary: Every disaster and emergency presents various and specific challenges. These can include scarcity of local resources and capacity in response, lack of safety and security even for relief workers, inefficiency due to lack of coordination and collaboration, and inequity of relief services reaching those in need.

Drawing from experiences of the Japan International Cooperation Agency (JICA), UNICEF, and the Global Fund – and addressing diverse relief operations and response to large-scale natural disasters such as Sumatra Earthquake/Indian Ocean Tsunami and Cyclone Nargis in Myanmar; conflicts such as those in Somalia and Afghanistan; environmental disasters such as those in the Aral Sea and the forest fires in Indonesia; infectious diseases outbreak/pandemic such as Ebola Virus Disease and COVID-19 – this presentation highlights improvements seen in recent years and points to more efforts needed based on lessons learned. Improvement can be accelerated through innovation and technology, especially in information and data management, communications, and logistics. More efficient and effective global and local architecture, coordination, and collaboration mechanisms are also critical to maximizing impact in response to emergencies.

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Collaboration and Coordination between Health and Non-Health Sectors for Disaster Risk Reduction

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Summary: The people-centered approach has become the key value of development. Health, as the core value of DRR, can be extended to all sectors for disaster risk reduction. As an international scientific programme co-sponsored by ISC and UNDRR, IRDR has implemented various research projects on analytical methodologies, data standards, computing capacity, multi-hazard early warning, resilient infrastructure, and community-based DRR. A few ICoEs of IRDR are especially focused on the public health impact of climate change and its adaptation via early warning, urban planning, and infrastructure construction. Health-centered infrastructure has become an emerging topic in the IRDR community. While cost-benefit analysis has dominated the planning, design, construction, and management of infrastructure in the past decades, the expected gain/loss of health years provides an alternative for monetary value. This endeavor calls for more extensive and in-depth collaboration and coordination among health sectors and other stakeholders.

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Report of APCDM2024: Toward Asia-Pacific Disaster Resilience

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Summary: The 15th Asia Pacific Conference on Disaster Medicine (APCDM) was held in Seoul, South Korea, on November 25–26, 2024, under the theme "Collaboration, Cooperation, Coordination for Disaster Response." The conference brought together 655 participants from 16 countries to share experiences and strategies in disaster prevention, preparedness, response, and recovery, especially in light of the significant suffering caused by the COVID-19 pandemic.

The Asia-Pacific region, home to 4.7 billion people—60% of the world's population—and covering 30% of the Earth's land area, is highly vulnerable to natural and man-made disasters. Urbanization, industrialization, aging populations, and climate change contribute to frequent large-scale disasters, including earthquakes, volcanic eruptions, typhoons, and industrial accidents.

The conference identified multiple common challenges and the need for comprehensive disaster medical responses to a wide range of scenarios, including natural disasters, CBRN (chemical, biological, radiological, and nuclear) incidents, and – importantly- public health emergencies. There is a pressing need for trans-disciplinary integration across historically divergent disciplines, including epidemiology, emergency medical services, acute care, dialysis, and mental health interventions.

The conference arrived at a central message that disaster medicine is not just individual healthcare but a form of public health service targeting society and systems. Effective disaster response requires national and community-level leadership, legal and regulatory frameworks, and strong interdisciplinary collaboration. Cooperation among medical professionals, public health experts, emergency responders, social scientists, and engineers is essential to building resilience.

To enhance disaster resilience, the region—and indeed the world—must emphasize the importance of robust databases, data-driven analyses, surge capacity systems to manage large-scale medical needs, and, above all, cultural excellence that fosters trust and cooperation within communities. The APCDM

served as a call to action, reaffirming that comprehensive, cross-sectoral engagement is vital for effective disaster preparedness and response.

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Climate Hazards and Health Equity in the Caribbean: Policy, Preparedness, and Emergency

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Summary: Climate change significantly impacts health across the Caribbean, increasing the frequency and severity of extreme weather events, including hurricanes, floods, heatwaves, droughts, and wildfires. These climate-related hazards place considerable strain on already limited healthcare systems, disrupt essential services, and disproportionately affect vulnerable populations, including people at extremes of age, individuals with chronic diseases, and low-income communities. This presentation looks at strategies to bolster emergency response, enhance public health preparedness, and facilitate the integration of climate resilience into regional health policy.

A multi-disciplinary approach is required for effective emergency response. This strategy encompasses targeted disaster medicine training for healthcare workers at all levels, streamlined rapid deployment protocols, the integration of early warning systems into healthcare operations, and standardized clinical pathways for managing climate-induced health conditions. Strengthening these components can reduce preventable morbidity and mortality in future climate-related disasters. Investments in resilient health infrastructure are critical for the region. Areas of priority include reinforcing infrastructure and energy systems to withstand hurricanes and sea level rise, and securing potable water supplies. Healthcare worker capacity building through surge response training, intersectoral and regional coordination, and logistical readiness is equally important. Community outreach programs focused on climate hazard education ensure that the affected populations are informed and prepared.

Healthcare governance must incorporate climate change adaptation. National health policies should align with global frameworks such as the WHO's operational guidance for climate-resilient health systems and the Sendai Framework for Disaster Risk Reduction. Climate-resilient policies should be driven by data-informed vulnerability assessments and allocate resources to priority areas. By implementing these strategies, Caribbean nations can build more resilient and equitable healthcare systems that protect populations and infrastructure amid intensifying climate impacts.

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HEALTH CARE WORKER SAFETY AND WELL-BEING

Helping the Helpers–Collaborative Care, Education, and Support

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Summary: This presentation elucidates experience from the field in providing mental health education and support to primary care providers of refugees. There are myriad models of care integration of mental health within primary care. Certain models allow for informal occasions to enhance provider well-being in addition to patient care. Collaborative care models (mental health and primary care) during crises provide unique opportunities for not only education but also support of practitioners.

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Prevalence of Mental Disorders Among Emergency Medical Services Personnel in Makkah Region, Saudi Arabia

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Introduction: Mental disorders, including stress, anxiety, and depression, are prevalent among Emergency Medical Services (EMS) workers globally due to their high-stress work environment. Despite the importance of these issues, data on EMS workers' mental health in Saudi Arabia is scarce. This study assessed the prevalence of these disorders among EMS workers in the Makkah region, providing insights into their well-being.
Methods: A cross-sectional study was conducted from January to April 2024 at the Saudi Red Crescent Authority (SRCA), the Ministry of Health (MOH), and the Ministry of National Guard Health Affairs (MNGHA) in the Makkah region. A convenience sample of 352 certified EMS workers, employed for over one year, completed an electronic survey assessing demographic data, lifestyle habits, and mental health using the DASS-21 scale. Descriptive statistics were used, with Chi-square and Mann-Whitney U tests for bivariate analysis, and logistic and linear regressions for multivariate analysis. Results were significant at $p < 0.05$.
Results: Among the 352 participants, 12.2%, 23.0%, and 17.6% experienced extremely severe stress, anxiety, and depression, respectively. Mann-Whitney U tests showed a significant association between a history of mental illness and severe stress, anxiety, and depression ($p < 0.05$). However, logistic regression revealed a significant link only to depression. Chi-square tests revealed significant associations between stress, anxiety, and depression levels and several factors. Linear regression indicated that non-communicable disease (NCD) medications increased stress, anxiety, and depression, while more sleep reduced all three. Additionally, years of experience were a significant predictor only for stress, indicating that more experience increased stress levels.
Conclusion: This study underscores the high prevalence of stress, anxiety, and depression among EMS personnel in the Makkah region, highlighting the influence of NCD medications, sleep duration, years of experience, and the history of mental illness. These results emphasize the urgent need for targeted mental health interventions and support systems for EMS workers.

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Acupuncture and Massage Are Ideal Not Only for Evacuees but Also for Relief Workers During a Disaster - Based on Health Support Activities During the Noto Peninsula Earthquake in 2024

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Summary: During the Noto Peninsula Earthquake in 2024, a health support program took place for approximately four months, providing acupuncture and massage therapies to both relief workers and evacuees. The health support for relief workers was provided at four locations, while the support for evacuees was provided at one location. In the acute phase, the program targeted medical personnel, Self-Defense Forces, and firefighters, focusing on treating physical problems such as back pain and ankle sprain. Approximately one month later, the extension was granted to city hall officials in affected cities who were also earthquake victims, having evacuated their homes. They were suffering from anxiety, insomnia, cold intolerance, and eye strain. After around three months had passed, the number of relief workers in those offices was increased with officials from outside, and they started addressing chronic fatigue issues, including shoulder stiffness, lower back pain, and knee joint pain. Given that the needs of those relief workers evolved in each phase, it is necessary to provide flexible support. Acupuncture and massage therapies can have positive effects broadly, covering "from acute to chronic stages," "in both physical and mental health," and "from pediatric to elderly ages." When a disaster occurs, it is often difficult to find medical records of affected individuals on time. In addition to that, little attention is paid to maintaining the health of those who make efforts to relieve difficulties in affected areas. Under such conditions, acupuncture and massage can contribute to easing relief workers' health problems and enable comprehensive health support in a disaster. So, it can be encouraged worldwide to consider incorporating these methods into disaster response efforts.

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Examining the Factors Contributing to Psychological Distress Among the Sri Lankan Doctors and Nurses During the COVID-19 Response

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Introduction: The COVID-19 pandemic has significantly strained global health systems, particularly impacting frontline healthcare workers (FLHCWs) who are at increased risk of experiencing mental health issues. These challenges affect the well-being of FLHCWs and have implications for patient care and the sustainability of the healthcare workforce. Despite these critical concerns, there remains a lack of comprehensive understanding regarding the specific factors contributing to psychological distress among FLHCWs in countries like Sri Lanka.
Methods: This study employed semi-structured interviews to explore the factors contributing to psychological distress among doctors and nurses in Sri Lanka during the COVID-19 response. Sixteen FLHCWs from various public hospitals were selected using snowball sampling and interviewed until data saturation was achieved. Thematic analysis was conducted to identify and categorize the participants' major stressors and support needs.
Results: Thematic analysis revealed several significant stressors experienced by FLHCWs during the COVID-19 response in Sri Lanka. These included staff shortages, excessive workloads, low confidence levels, moral dilemmas, social stigma, family impacts, issues with protective equipment, triage complexities, and inadequate rewards, particularly prevalent in smaller hospitals.
Conclusion: Addressing the psychological distress among FLHCWs necessitates strategic interventions such as capacity building, equitable distribution of resources, ensuring safe working environments, and implementing robust support mechanisms. These findings underscore the importance of developing sustainable strategies to enhance mental health resilience among FLHCWs globally, thereby safeguarding their well-being and patient care quality during emergencies and disasters.

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Junior Doctor Wellbeing Interventions Implemented During and After the COVID-19 Pandemic: A Systematic Review

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Introduction: The well-being of doctors is crucial for both the individuals and their patients; however, doctors experience higher rates of anxiety, depression, and burnout compared to the general population. The COVID-19 pandemic intensified these issues, particularly among junior doctors. A key step in addressing these challenges is to assess evidence-based well-being interventions implemented during and after the pandemic.
Question: In junior doctors, which well-being interventions were implemented and were effective during and after the COVID-19 pandemic?
Methods: This systematic review was reported following PRISMA guidelines using Cochrane risk-of-bias tools and the GRADE framework. Eligibility criteria: Peer-reviewed studies in English reporting on primary data and assessing interventions implemented after January 1, 2020, were included. Exclusions were letters, editorials, commentaries, conference abstracts, and studies that did not isolate junior doctor data.
Information sources: Databases searched included Embase, PubMed, Ovid, and Scopus on October 25, 2023.
Results: Included studies: Twenty-six studies with 7751 participants were included, predominantly from the USA or UK, with a mean age range of 24.2 - 30.0 years. Twenty-four studies were of very-low or low-quality evidence. The three primary categories of implemented interventions were workplace improvements, increasing personal resources, and problem-resolution-focused.
Synthesis of Results: Significance was found in four studies, with $p \leq 0.05$ and a quality of evidence higher than a very-low GRADE rating. These results demonstrated a reduction in burnout from an online group coaching intervention and a preparatory course, as well as a reduction in anxiety from a novel transitional role, and after the use of a smartphone application.
Conclusion: Limitations of evidence: Inconsistency in language, lack of definitions, and poor study designs, including limited co-design, hindered drawing meaningful conclusions. The impact of COVID-19 was noted with the modification of interventions and study designs.
Interpretation: Evidence-based interventions to address junior doctor wellbeing from high-quality studies are urgently required.

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A Scoping Review of EMS and Emergency Department Worker Masking Behaviors

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Introduction: Emergency Department (ED) and Emergency Medical Services (EMS) workers are regularly exposed to undifferentiated patients during daily work activities. Patient encounters often occur before the full elucidation of the patient's symptoms. As such, it may be supposed that ED and EMS workers are regularly exposed to respiratory illnesses and pathogens prior to clinicians being aware of the risk of exposure. This review sought to assess the literature about the masking behaviors of EMS and ED workers.

Methods: A literature review was conducted using key terms to look at ED and EMS populations. Terms focused on papers with respiratory surveillance data and masking behaviors. Papers written in English were included. 577 papers were included per the search terms, and nine were eligible for data extraction.
Results: Eight papers from 2020-2022 focused on the COVID-19 pandemic. One paper from 2015 studied MERS exposure in an ED. Three papers focused on EMS, while the remaining six focused on ED workers. Six papers were a one time survey and not longitudinal, and two were retrospective chart reviews. Only one paper had weekly surveys assessing behaviors. Data were heterogeneous, and masking behaviors varied widely from no masks worn to full personal protective equipment (PPE) worn. In the final presentation, masking rates, a PRISMA diagram, and an evaluation of the strength of evidence will be included.
Conclusion: There is limited data about longitudinal masking and PPE behavior among EMS and ED workers. One time surveys limit assessing true masking behaviors. The majority of papers collected data during the height of the COVID-19 pandemic (2020-2022), therefore, further research must be conducted to look at changes in masking behaviors, symptoms, and sick leave as COVID-19 rates fluctuate, change, and coexist with other respiratory illnesses.

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Study of the Adoption of Safety Manual Handling Skills Among Emergency Medical Technicians by Using the Integrated Behavioral Model

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Introduction: Emergency medical technicians (EMTs) often perform patient-handling tasks in emergency settings, posing a high risk of occupational injury. The prevalence of Work-Related Musculoskeletal Disorders (WRMSD) among EMTs has been underestimated due to the lower reporting rate of WRMSD events in Taiwan. This study employed a nationwide safety manual handling survey by integrating the health belief model (HBM) and the transtheoretical model (TTM) to examine behavioral factors influencing the adoption of safety manual handling skills among EMTs.
Methods: A cross-sectional study was conducted among frontline EMTs in Taiwan, including full-time and volunteer EMTs from fire departments in Taiwan. Data on individual characteristics, WRMSD experiences, six factors of measuring attitude toward safety handling, and behavioral change stages to adopting safety handling via a questionnaire were analyzed using descriptive statistics and multinomial logistic regression to determine the impact of each factor on adopting safe handling techniques.
Results: A total of 761 participants completed the questionnaire. The lower back was the most frequent WRMSD body part among participants. The most frequent type of patient handling-related injuries was strain/sprain (88.4%). The patient handling-related injuries occurred within 5.3 years after career initiation in 76.9% of participants. The results also indicated that higher perceived benefits and lower perceived barriers increase the odds of being in all TTM stages. The cue to action level was also a predictor for investigating the likelihood of being in each stage of change compared to the reference category.
Conclusion: Promoting the adoption of safety handling skills is a long-term battle in improving occupational health and safety among EMTs. Perceived benefits, perceived barriers, and cues to action may be the critical factors for designing and implementing the interventions in the future. Future interventions should focus on letting EMTs understand the benefits and barriers of conducting safety manual handling and provide clear, real-world guidance.

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Network Analysis of the Relationships Between Psychological Capital and Emotional Exhaustion in Clinical Nurses During the Post-Epidemic Period

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Introduction: In the post-pandemic era, nurses are frontline workers directly involved in patient treatment and care. They may encounter serious psychological and mental problems, which can lead to emotional exhaustion. Yet, researchers have investigated the relationship between psychological capital and emotional exhaustion using total scores. Network analysis studies on psychological capital and emotional exhaustion in nurses during the post-epidemic period are lacking, which can deeply reveal the complex relationship between variables and provide a more comprehensive and accurate perspective for us to understand the interaction mechanism between these two variables.
Methods: A cross-sectional survey was conducted from December 2022 to January 2023 on 1185 frontline clinical nurses from 5 hospitals in Xi'an, China. The clinical nurses were selected using the convenience sample approach through online platforms upon the notice of hospital administrators. Psychological capital and emotional exhaustion were assessed using the Psychological Capital Questionnaire and the Chinese Maslach Burnout Inventory (CMBI). Network analyses were used for the statistical analysis.
Results: From a network analysis perspective, "I feel exhausted" (Q3) and "I am optimistic about the future of my job" (X22) have the highest expected influence, suggesting their most significance in the network. In the community of emotional exhaustion, the statement "I feel very tired" (Q1) has the highest bridge expected influence, while in the community of psychological capital, the statement "When I have a setback at work, I

have a hard time recovering from it " (X13) has the highest bridge expected influence, indicating they have the strongest connections with the other community.
Conclusion: Complex patterns of relationships emerged between psychological capital and emotional exhaustion. These results have significant implications for clinical practice in the post-epidemic era. Stress management workshops with relaxation techniques and training on building psychological capital, including cultivating optimism and providing resilience training, could be implemented.

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When Caring Takes Its Toll: Trauma-Related Mental Health Outcomes Among Healthcare Workers Treating Severely Ill COVID-19 Patients – a Meta-Analysis

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Introduction: The COVID-19 pandemic likely increased exposure to potentially traumatic events. A population of special interest is healthcare workers who cared for COVID-19 patients, as they were, especially during the peaks of the pandemic, exposed to groups of severely ill or dying patients under extreme care delivery circumstances. This review and meta-analysis estimate the pooled prevalence of mental health outcomes among healthcare workers exposed to these conditions.
Methods: A systematic literature search was conducted using several databases: Embase, PubMed, PsycINFO, and PTSDPubs. Inclusion criteria focused on studies assessing work-related trauma exposure among healthcare workers during the pandemic and those reporting prevalence rates of trauma-related mental health outcomes (PTSD, anxiety, and depression). A multilevel meta-regression was used to calculate pooled prevalence rates and examine the impact of study characteristics on outcomes.
Results: Eleven studies were included that assessed the mental health of healthcare workers who cared for severely ill or dying COVID-19 patients. The mean pooled prevalence of trauma-related mental health outcomes was 26.1%. There was no significant difference in pooled prevalence between outcome types (PTSD, anxiety, or depression). A significant difference was observed between the pooled prevalence from studies conducted in countries with a high Human Development Index (12.9%) compared to studies from countries with a very high Human Development Index (45.8%).
Conclusion: A relatively high proportion of healthcare workers exhibit psychopathology following work-related exposure to the pandemic. This highlights the severe psychological toll of the pandemic on this professional group, who faced sustained exposure to stressful situations during the pandemic in exceedingly difficult circumstances. It is crucial to ensure early access to psychosocial support, such as organized peer support, to healthcare workers during major public health crises, especially during crises when traditional social support systems may be disrupted.

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Managing a Heavy Patient Load, Intense Mental Stress, Immediate Life Threats, and Real-Time Task Performance Requirement: The Experiences of Medical Personnel During the October 7 Attack in Israel

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Introduction: On October 7, 2023, Hamas launched a devastating attack on Israel, resulting in over one thousand deaths and over 1,900 injuries. Physicians, paramedics, and medics were caught in the crossfire, both as victims and first responders. They faced the daunting task of providing care under continuous fire while grappling with the knowledge that their colleagues were among the victims. This study explores the psychological and professional challenges healthcare providers encounter during this extreme scenario, examining their coping mechanisms and ability to deliver critical care in the face of personal risk and loss.
Methods: The research employed a qualitative methodology involving in-depth interviews with seven paramedics, five doctors, and six medics who provided continuous medical care during the events of October 7, fully aware that their colleagues had been injured or killed. The goal was to comprehensively understand the difficulties they experienced, their coping strategies, and their ability to function under such extreme circumstances.
Results: In the research, five central themes emerged consistently across all interviews: personal and moral dedication, prior experience in high-stress environments, awareness of their irreplaceability, the necessity to fulfill duties, and the understanding that the deceased medical colleagues would have expected them to continue their work.
Conclusion: This research provides a compelling and unique insight into the experiences of field-level medical personnel who must deliver aid while facing immediate danger, knowing that their colleagues have been injured or killed. The findings offer valuable lessons that can enhance preparedness and resilience for similar events in the future, not only in military and conflict settings but also in the context of other large-scale crises and attacks on healthcare facilities. The study's insights can inform the development of targeted training, support systems, and organizational strategies to better protect and empower medical personnel in the face of such extraordinary challenges.

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A Qualitative Analysis of Social Support for Disaster Relief Workers

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Introduction: In recent years, the expansion and prolonged duration of disasters have underscored the importance of addressing traumatic stress among disaster support personnel. Effective support mechanisms are essential to mitigate the psychological impact experienced by individuals engaged in disaster response.
Methods: A survey was conducted from August to September 2021 to examine how disaster support personnel manage traumatic stress across various professions and organizational affiliations. A questionnaire was distributed to 1,109 organizations involved in disaster response in Japan, with ethical approval from the Life Design Graduate School Ethics Committee at Toyo University (approval number: 2020- 7S).
Results: Valid responses were obtained from 581 individuals, including members of the Self-Defense Forces (22), police (12), fire services (260), coast guard (6), healthcare (146), social welfare (49), government administration (37), disaster volunteers (29), and psychological and other professionals (20). Qualitative analysis was conducted using the Steps for Coding and Theorization (SCAT) method to examine free-text responses. The analysis identified five key elements necessary for social support to assist disaster responders: the importance of psychological support, assistance from family and peers, workplace environment and interpersonal relationships, ongoing education and training, and structured organizational support systems.
Conclusion: In large-scale disaster settings where multiple professions collaborate, establishing shared rest spaces, providing access to psychological counselors, and conducting regular stress assessments are critical for enhancing mental health support. Furthermore, feedback mechanisms, such as coordination meetings, can strengthen support systems, promote mental well-being, and foster a cooperative, multi-agency approach to sustaining the mental health of disaster response personnel.

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Protecting High-Risk Workers: Available Evidence and Implications for Guidelines

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Introduction: Evidence-based guidelines for psychosocial care support the well-being of workers in high-risk fields like ambulance services, the fire brigade, and the police. Between 2022 and 2024, the Dutch guidelines were fully revised. Part of this revision involved a systematic literature review to examine (1) psychological effects of impactful events on uniformed personnel and factors that influence these risks, and (2) available evidence for effective prevention strategies.
Methods: Two comprehensive searches were conducted in Ovid Medline ALL (1949-2022), PsycINFO (Ovid; 1806-2022), and PTSDpubs (National Center for PTSD, US; 1871-2022) between September and November 2022, with an update in summer 2024. Both searches were registered in PROSPERO. A wide range of search terms was used, derived from existing guidelines, expanded with new terms, and peer-reviewed by experts to ensure relevance. Two independent researchers screened the results and extracted key data, with 15-20% double-checked for consistency. Methodological quality of all included studies was assessed.
Results: For study one, 1,413 studies were screened, resulting in 43 included studies. The quality of studies (using AMSTAR criteria) was generally low, and most were cross-sectional. Effects were found in several domains: somatic, psychological, social, work-related, behavioral, and ethical. Risk factors included aspects of the incident, personal history, work pressure, and coping style, while protective factors included work meaningfulness, social support, and training. For study two, 2,334 studies were screened, with 22 RCTs included. Twenty-five prevention interventions were identified, most being selective (48%) or universal (40%) in nature. However, study quality was generally low (according to the Cochrane Risk of Bias tool), with some interventions showing mixed outcomes.
Conclusion: The identified factors and prevention studies are valuable for understanding and addressing mental health challenges in high-risk occupations. However, the review highlights a lack of high-quality empirical knowledge, complicating the development of evidence-based guidelines and urging for expert-based co-creation models.

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Armed Assailant in a Health Care Setting: Are We Prepared?

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Summary: While armed assailant attacks in a healthcare setting are rare, they pose a potential risk to healthcare staff, patients, visitors, and the infrastructure. They can disrupt health care services and deprive people of life-saving treatment.

Many hospitals have well-developed disaster plans to respond to a mass casualty incident (MCI) occurring outside the hospital. Hospital staff receive emergency preparedness training to respond to MCI as part of their job scope, either through online modules or participation in disaster drills.

A lack of an armed assailant incident response plan can significantly reduce the hospital's ability to appropriately respond to such an incident. The random, short-lasting but violent nature of an armed assailant incident makes healthcare response extremely challenging. Along with the response to the incident, the other challenges also include the management of the assailant as well as the safety and management of the patients, public, and healthcare staff during the incident.

The primary objectives of the response plan should be:

- threat assessment and pre-incident planning

- initiating immediate response during an incident to minimize the assailant's access to potential victims
- damage and post-incident recovery and support plans

During the attack, based on the best available evidence, adopting the model of "Run, Hide, Fight" or "Secure, Preserve, Tell" are recommended. Care provision to the injured during this event should be remembered by the acronym THREAT.

- T- Threat Suppression
- H- Hemorrhage Control
- RE - Rapid Extrication to safety
- A - Assessment by medical providers
- T- Transport to definitive care

Once the attack has ended, there must be an assessment of the department/hospital's ability to continue routine operations. Various stakeholders of the health care facility should work together to develop an armed assailant incident response plan that best suits their needs and capacity. This will be of immense benefit for keeping healthcare facilities safe.

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Attacks on Aid Workers in an Active War Zone: A Comparison Between Gaza and Ukraine

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Summary: The war in Ukraine and Gaza highlighted challenges to the way aid is delivered, and responders can do their work. These challenges include targeting of aid workers; threats and arrest of aid workers; deliberate obstruction to providing care; and the threatened safety and security of aid workers and death. Aid workers need to change their response and recognize that this includes how aid is delivered to countries in an active war zone. This poster will provide a comparison between the wars in Ukraine since February 2022 and Gaza since October 2023, to aid workers. This will include comparing trends in aid workers killed, attacked, abducted, and injured, as well as challenges in evacuations. Additionally, lessons were learned as it pertained to new trends in conflict zones and the impact on aid workers. The need for additional safety and security measures leads to civilians not having access to care, which increases their morbidity and adds to the mortality rates. Significant findings evaluate the trends and changes aid workers need to implement when responding to other active war zones to ensure the safety of responders.

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Fukushima Prefecture Regional Disaster Medical Activities as a Victim of the Great East Japan Earthquake

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Summary: When the Earthquake struck, Masu Memorial Hospital was forced to suspend routine medical service. After the earthquake, there were serious problems with high radiation levels in the residential areas of the Nakadori region of Fukushima Prefecture, where the hospital is located. As a result, children's outdoor activities were restricted for two years. Witnessing the reality of the children's situation and feeling helpless, the hospital decided to study disaster medicine and fight for the children's generation.

In August 2013, the team participated in the Fukushima DMAT training. It was also convinced that there is disaster medical care that can be provided only by those who were in charge of community medical care. After the DMAT training, recognizing the importance of regional disaster response, the hospital is currently researching past disasters in the Adachi region of Fukushima Prefecture, where the hospital is located, and has established a department in charge of this area to examine how to respond to disasters daily. As a result, it was able to conduct external activities for various disasters that occurred outside of Fukushima Prefecture. In particular, in 2019, the team assisted hospitals submerged by the Abukuma River flooding. In recognition of these achievements, a Disaster Emergency Medical Department was organized within our hospital in 2018, and in 2021, the hospital was designated as a Disaster Base Hospital of Fukushima prefecture.

In times of disaster, one must have the courage to calmly and directly face unpredictable events and make appropriate decisions. As medical professionals in Fukushima Prefecture, the goal is to continue efforts to build a disaster medical organization with colleagues that can be passed on to the next generation.

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The Six-Year Mental Health Time Course of Disaster Workers in the Flooding of Joso City, Japan

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Introduction: On September 10th, 2015, the Kanto-Tohoku heavy rain caused the banks of the Kinu River in Joso City to collapse over approximately 200m, flooding one-third of the city. As a result, 4,258 people were evacuated. Local government officers, while being evacuees, have been supporting the affected citizens for years. To evaluate their mental health deterioration, five follow-up surveys and staff follow-ups from 2015 to 2020 were conducted.
Methods: The Department of Disaster and Community Psychiatry, University of Tsukuba, conducted a survey on mental health and mental disorders after the disaster among Joso City employees from 2015 to 2020. The questionnaires used were the Kessler Distress Scale (K6), Peritraumatic Distress Index (PDI), Impact of Event Scale-Revised (IESR), Center for Epidemiologic Studies Depression Scale (CESD), and Resilience Scale-14 (RS14). The study was approved by the Ethics Committee of the University of Tsukuba Hospital.
Results: 559 City Hall workers joined the survey, scores in stress-related scales showed a decreasing trend by years with an average of 6.2 (1st yr), 4.2 (2nd yr), 4.2 (3rd yr),

4.1(4th yr), and 4.2 (5th yr) in K6. 15.1, 14.6, 14.1, 14, 2, and 13.5 in PDI, and 12.9, 11.0, 10.1, 8.9, and 9.94 in IESR. On the other hand, the depression and resilience scale showed a stable trend, with an average of 9.0, 7.8, 8.6, 8.9, and 9.1 in CESD, and 61.4, 62.8, 62.5, 62.7, and 61.7 in RS-14.

Conclusion: It was found that the number of people with stress-related problems was. The K6, PDI, and IESR scores were on a decrease. There was not much change in the CESD or RS14 scores. Results suggest that stress-related mental health improves as recovery progresses over time, and the psychological impacts of adapting to the effects of the flood do not change.

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Reflections on COVID-19 Response: Preparing for Future Infectious Diseases with High Uncertainty

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Introduction: During the initial wave of the COVID-19 pandemic, our hospital established a task force to coordinate efforts across the institution in response to the growing health crisis. As the first wave began to subside, the hospital scaled down its response capacity and conducted a survey to assess the experiences of staff members.

Methods: The survey aimed to inform measures to strengthen preparedness for subsequent waves. Key topics included levels of stress, concerns about infection, attitudes toward future involvement, and an open-ended section for additional comments. Data collection was conducted online.

Results: A total of 338 responses were received, with nurses comprising 57%, physicians 12%, and other staff 31%. While 45.9% provided favorable feedback regarding the response measures, 65.6% reported experiencing mental stress, 50.5% physical stress, and 79.3% expressed concern about contracting the virus. Approximately half (49.1%) indicated their intention to participate in the response to future waves, though 27.5% expressed reluctance.

The survey revealed diverse suggestions for improvement, primarily related to command structure, information dissemination and sharing, infection control protocols at various stages, and mental health support for staff. Notably, perceptions of the same measures varied significantly, highlighting the need for careful communication. Effective risk communication, which is crucial during public health emergencies, was identified as a key area for improvement. Both management and frontline staff would benefit from enhanced understanding of risk communication strategies.

Conclusion: The unprecedented nature of the pandemic response placed significant mental and physical burdens on healthcare workers, coupled with high levels of concern about infection. The findings underscore the importance of thoughtful communication, particularly in crises, where messages can be perceived differently depending on the recipient's perspective.

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Psychosocial Support for Special Enforcement Officers in Response to Critical Incidents

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Introduction: Special Enforcement Officers (SEOs) in the Netherlands, employed by municipalities to enforce regulations in public spaces, are frequently exposed to aggression and violence, increasing their risk of psychological issues. The "Psychosocial Support for High-Risk Professions" guidelines provide a basis for assessing SEOs' psychosocial support needs; however, existing support practices often fall short of addressing the unique demands of their roles. As SEOs' tasks and responsibilities continue to expand, their specific psychosocial support needs must be better understood and addressed.

Methods: A mixed-methods approach was applied, including a document review and semi-structured interviews with SEOs and their supervisors. Document analysis identified existing preventive strategies and evidence-based best practices, creating a preliminary list of psychosocial needs. A total of 17 SEOs and 10 supervisors were interviewed, focusing on SEOs' support needs, best practices, and policy gaps across different municipalities and geographic regions. Qualitative thematic analysis was used to uncover recurring themes, particularly where formal support policies diverged from SEOs' practical experiences and perceived needs.

Results: Significant variability was found in perceived support levels, with smaller municipalities frequently offering fewer formal resources. Informal peer support emerged as a primary source of reassurance and solidarity among SEOs, while formal support, when provided, was more effective when supervisors had enforcement experience. A critical issue identified was ambiguity in SEOs' roles, particularly regarding their overlap with police duties. This role ambiguity fosters confusion and insecurity, amplifying stress and diminishing the impact of other support measures. SEOs consistently emphasized that without a clear role definition, other support needs remain challenging to address effectively.

Conclusion: The findings highlight the need for an enhanced psychosocial support framework that includes clear role definitions, access to structured support systems, and acknowledgment of SEOs' unique challenges. Addressing the foundational issue of role ambiguity is essential for reducing psychological risks and fostering resilience among SEOs.

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Trends in US Hospital-Based Gun Violence From 2000-2019

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Introduction: Violence in health care settings, particularly directed toward healthcare workers, has received increasing

attention in the United States. While health care-related violence has taken many forms, shootings have raised special concerns, given the number of potential victims and disruption to a community's essential health infrastructure. However, there is limited evidence on trends in hospital-based gun violence. To address this gap, we studied characteristics of US hospital-based shootings over two decades.

Methods: A search of Nexis Uni was conducted for newspaper articles, newswires, web news articles, or magazines mentioning hospital-based shootings during the period from 2000 and 2019. The search strategy included the terms ("shooting" w/5 "healthcare" OR ("shooting" w/5 "health care") OR ("shooting" w/5 "hospital") OR ("shooting" w/5 "emergency room") OR ("shooting" w/5 "ER"). Articles were screened for relevance, and data were subsequently extracted and categorized by two independent reviewers.

Results: From 2000-2019, we identified 148 hospital-based shootings with 241 victims. Mean number of shootings increased from 3.4/year during 2000-2004 to 8.4/year during 2005-2009 [rate ratio (RR): 2.5, 95% CI: 1.4, 4.3], to 11.2/year during 2010-2014 (RR: 1.3, 95% CI: 0.9, 2.0) but decreased to 6.6/year during 2015-2019 (RR: 0.6, 95% CI: 0.4, 0.9). An overwhelming majority (91%) of shooters were male, with a median age of 46. The most frequent motive was the spillover of social violence (22%). The majority (59%) of events involved a single victim, although 14% had 3 or more victims. Perpetrators were also most likely to be victims (35%), followed by hospital staff (26%).

Conclusion: Hospital-based shootings remain a persistent threat, with the 2010-2014 period representing increased risk. While motives were varied, the spillover of social violence was seen with the greatest frequency. Most hospital shootings involved a single victim, but some events involved three or more victims. These findings can potentially inform prevention and mitigation strategies for hospital-based gun violence.

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The Association Between the Activity Environment and Performance of Responders in the 2024 Noto Peninsula Earthquake: Analysis of Responders' Health Management Version of J-SPEED

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Introduction: Following natural disasters, specialized health, medical, and welfare teams are deployed to affected areas to support the affected population. It is crucial to manage the health of affected individuals, but also that of the responders. It has been suggested that responders' performance declines when they experience physical or mental health issues, highlighting the need for comprehensive health management, including environmental factors. This study aimed to examine the association between responders' activity environments and their performance using the Responders Health Management ver. of the Japan-Surveillance in Post-Extreme Emergencies and Disasters (J-SPEED).

Methods: This study targeted health, medical, and welfare responders involved in the response to the Noto Peninsula earthquake on January 1, 2024. Data were collected via the Responders Health Management ver. of J-SPEED from January 6 to March 31, 2024. We analyzed the association between responders' activity environments and their performance during the acute (January) and subacute (February – March) phases.

Results: Several activity environment factors were significantly associated with lower performance throughout the study period, including "Unclear organization and chain of command", "Difficulty in ensuring a safe activity environment", and "Lack of meals and breaks". During the acute phase, "Activities at headquarters" was a significant factor associated with lower performance, while in the subacute phase, "Lack of infection protection equipment" was a significant factor.

Conclusion: This study found phase-specific factors associated with lower performance in disaster relief responders. These findings suggest the need to consider phase-specific responses when developing future health care strategies for responders.

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A Systematic Review on the Use of Psychological First Aid and Stress First Aid in Supporting Healthcare Workers During the COVID-19 Pandemic

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Introduction: The COVID-19 pandemic has caused significant psychological distress, especially among healthcare workers. While Psychological First Aid (PFA) and Stress First Aid (SFA) were commonly utilized in disaster settings, a few institutions had adapted them in the pandemic to provide psychological support for their healthcare workers. This systematic review aims to explore the application of PFA and SFA in addressing the psychological challenges faced by healthcare workers during the COVID-19 pandemic.

Methods: Searches were conducted in PubMed, CINAHL, and the Cochrane Library in August 2024. Studies were included if they utilized PFA or SFA as the primary intervention or employed frameworks based on either approach.

Results: Seven studies were included in the review, with six conducted in the United States. Three studies focused on PFA-related interventions. One study reported that up to 20% of staff utilized the service. Another study highlighted a high satisfaction rate with the sessions, significant reductions in anxiety and emotional distress, and improved coping abilities. Four studies explored the implementation of PFA and SFA training for healthcare workers. Benefits of this training include increased awareness of available psychological resources, enhanced resilience, improved communication skills, greater

proficiency in peer support, and better overall mental well-being.

Conclusion: Current literature provided encouraging evidence for the effectiveness of PFA and SFA in supporting healthcare workers during the COVID-19 pandemic. However, further research is needed to evaluate the impact of scaling up these programs and to determine their long-term effectiveness in preserving the mental health, well-being, and resilience among healthcare workers.

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A Comparison of Harm to Aid Workers in Palestine to Aid Workers in 20 Countries: A Decade in Review

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Summary: The purpose of this presentation is to highlight the humanitarian risk aid workers face when responding to active war zones/conflict areas. Over the last 10 years, there has been an increase in aid workers killed in active war zones. A decade later, the reports of aid workers targeted, arrested, and/or killed are on the rise. A comparison of 20 countries where ongoing violence and war have greatly impacted aid workers' ability to respond will be compared to the war in Gaza since October 2023. Graphical evidence will highlight the aid workers killed, healthcare workers arrested, as well as the number of incidents where damage to healthcare facilities and obstruction in providing care occurred.

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Beyond Capacity: Resilience of Intensive Care Staff During a Near Disaster in Sweden

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Introduction: The intensive care unit is a high-resource environment caring for the most critically ill patients that often runs at near or full capacity during regular activity. There is a need to understand how ICU staff navigate the surge in healthcare demand, in a country with a traditionally low disaster preparedness, during a real-time of near-disaster.

Methods: Semi-structured interviews were conducted with a strategic sample of eleven ICU staff members from three hospitals in Stockholm, Sweden (anesthesiologists, specialist nurses, nurse assistants) who worked during a state of near disaster in 2020. The interviews were analyzed using qualitative content analysis.

Results: Three main categories were identified: organizational level, team level, and individual level. Challenges of rapid expansion, insufficient supplies, and unfamiliarity with equipment were described. Inconsistencies in staff continuity and training in crisis were identified. Moral distress was described due to the overwhelming situation. The importance of the voluntary nature of an emergency contract was emphasized to maintain staff morale and trust in management. The flow of creativity was described. Hierarchy and prestige within the teams could disappear. Over time, the ICU staff became leaders, delegating and educating in the ICU. Experience with excessive work hours, wearing military gas masks was gained.

Conclusion: Our findings indicate that in situations of near disaster, local leadership should focus on physical presence, clear communication, and staff well-being. Hospitals may consider a balanced approach that integrates hierarchical decision-making with the skills and knowledge of frontline staff. Customized mental health programs should be prepared to be activated, and methods for the fast integration of new ICU staff without prior ICU knowledge need to be developed. When standard health care can no longer be provided, regional leadership should consider activating the disaster mode.

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The Impact of Covid-19 Pandemic on Paramedics' Mental Health and Well-Being

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Introduction: The COVID-19 pandemic has had a profound impact on the mental health and well-being of healthcare professionals, including paramedics. This systematic review aims to investigate the specific effects of the pandemic on paramedics' mental health and identify potential coping strategies. By examining the available literature, this review seeks to contribute to a better understanding of the challenges faced by paramedics during this unprecedented crisis and to inform the development of targeted interventions to support their mental health.

Methods: A systematic search was conducted using three electronic databases: MEDLINE, CINAHL Complete, and Scopus. The search terms included "COVID-19," "coronavirus," "paramedic," "emergency medical service," "mental health," "stress," and "anxiety." Inclusion criteria were limited to peer-reviewed articles published between 2021 and 2023, focusing on studies that investigated the impact of the COVID-19 pandemic on paramedics' mental health. Exclusion criteria included studies that did not specifically focus on paramedics or did not report on mental health outcomes.

Results: The results of the systematic review revealed a significant negative impact of the COVID-19 pandemic on paramedics' mental health. Several studies reported increased levels of stress, anxiety, depression, and burnout among paramedics during the pandemic. Work-related stressors such as increased workload, exposure to infectious diseases, and challenging working conditions were identified as key contributors to these mental health issues. Additionally, personal stressors, including fear of infection, financial concerns, and social isolation, exacerbated the negative impact of the pandemic on paramedics' mental well-being.

Conclusion: The COVID-19 pandemic negatively impacted paramedics' mental health, leading to increased stress, anxiety, and burnout. To address this, it's crucial to provide mental health support, promote self-care, and foster supportive work environments. Further research is needed to understand the long-term impact and develop effective interventions.

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Health Concerns Among Taipei Search and Rescue Team Members Responding to the 2023 Turkey-Syria Earthquake

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Summary: This report demonstrated the health challenges faced by Taipei Search and Rescue Team members who responded to the 2023 Turkey-Syria earthquake. Sixty members joined the Taiwan Search and Rescue Team from February 7 to 14, 2023. Over the mission period, the team completed over 30 search operations, resulting in two successful rescues and one field amputation. During the mission, team members had 24 documented medical consultations for various health concerns. These included five cases of soft tissue injuries, four frostbites, three headaches, three respiratory tract irritations, two skin rashes, two cases of symptomatic hypertension, two upper respiratory infections, and single cases of stress-related symptoms, diarrhea, and toothache.

General health symptoms affected the majority of the team, with 89.8% reporting sleep issues, 67.8% experiencing skin problems, 45.8% musculoskeletal pain, 40.7% headaches, 40.0% upper respiratory infections, and 30.5% constipation. One month post-mission, health concerns persisted for some team members: 15 continued to experience respiratory symptoms, five reported ongoing sleep problems, four had elevated blood pressure, and one developed a skin infection.

To monitor psychological impact, the PTSD Checklist for DSM-5 (PCL-5) was administered across four sessions—immediately post-mission, at two weeks, at four weeks, and six months. Average PCL-5 scores were initially 7.30 (SD: 9.84) and peaked at 8.69 (SD: 10.30) at two weeks before declining. Five members initially scored above 30, yet their scores decreased over time, with no provisional PTSD cases remaining by the fourth week.

These findings reveal the significant physical and psychological toll faced by responders in disaster scenarios. This report further emphasized the vital role of the medical unit within the search and rescue team, as comprehensive medical support during deployment and post-mission is crucial for improving the well-being of rescue personnel in demanding operations.

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Perceived Frontline MEDEVAC Challenges and Strategies of Emergency Medical Services in the Ukrainian War

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Introduction: Modern warfare, with the use of long-range, high-impact weaponry, has escalated both the number and severity of injuries compared to past conflicts. Additionally, widespread infrastructure destruction, particularly of roads, complicates medical evacuation. Alarmingly, healthcare faces continuous targeted attacks, as verified in Ukraine, indicating a disregard for the Geneva Convention and humanitarian law. All of this combined has resulted in increased morbidity and mortality. To improve safety and efficacy in future medical evacuations (MEDEVAC), it is desirable to examine current emergency medical services (EMS) operations in modern warfare. This study aims to describe challenges faced by ambulance personnel operating in Ukrainian war zones during the evacuation of casualties and to understand the strategies employed to mitigate risks.

Methods: The study uses two data sources: a literature search through academic databases, grey literature, and websites with relevant keywords, and interviews with personnel (n = 11) experienced in Ukraine EMS and war zones. The data were thematically analyzed.

Results: Literature descriptions of EMS being targeted for attacks were supported by study participants' first-hand testimonies. Participants described a constant fear of being attacked while evacuating casualties, as well as adjustments in work methods to enhance safety, such as keeping the vehicle in motion or hidden, and modifying its colors (camouflage), lighting, and interiors to reduce the risk of being targeted.

Conclusion: It may not be obvious to civilian EMS that some protective measures taken when operating in a context of warfare may breach their non-combatant protection under international humanitarian law, in effect rendering them a form of military combatant status, while lacking in military protection and training. This ethical and judicial grey zone dilemma must be addressed by civilian and military actors, while

acknowledging that its root cause is unlawful and condemnable military attacks on healthcare services.

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Ongoing Deadly Violence (PDV) Training Exercise at Södersjukhuset (Stockholm South General Hospital), Sweden, October 2024 Ellinor Linde Blidegård, Emergency Preparedness Coordinator

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Summary: PDV (Ongoing Deadly Violence) refers to incidents where one or more attackers subject the public to life-threatening violence, often using simple means. These events are typically brief but result in many serious injuries. Saving lives and preserving health during ongoing deadly violence in a hospital environment requires effective, coordinated efforts based on a unified approach. It requires mental preparedness, and the involved parties have jointly planned, trained, and drilled their staff.

Södersjukhuset is one of Sweden's largest hospitals for acute care. A PDV exercise was conducted at the hospital on October 2, 2024. The goal was to prepare hospital staff to handle a violent incident within a healthcare setting. The exercise involved personnel from the information desk, pediatric emergency department, and hospital security, working in collaboration with police special squad teams and local officers. Before the exercise, each department developed specific action lists to prepare its staff.

The exercise began with a realistic scenario: a couple who had lost their child acted violently in the pediatric department, using a knife and handgun, which created a simulated casualty scene with injured role players from knife and gunshot wounds. Staff responded according to the PDV plan, locked themselves in, and alerted the police and security guards. Within 14 minutes, the police had neutralized the perpetrators, and hospital staff initiated acute medical interventions. All injured role players were triaged and treated.

After the exercise, a joint evaluation was held with all participants. The police deemed the exercise highly successful, and hospital staff felt strengthened in their professional roles and their ability to handle a PDV event. In addition, psychological debriefing sessions were arranged to process emotions and reflections. To conclude, the hospital's readiness and coordination abilities are reinforced; however, the training of staff and updating of action plans for PDV events continue.

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Preparedness of Emergency Healthcare Staff for Mass Casualty Incidents in Conflict Zones: A Case Study from Shendi, Sudan

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Introduction: Mass casualty incidents (MCIs) are expected in war zones, making the readiness of healthcare teams and facilities crucial for shaping outcomes. This study investigates the preparedness of emergency staff in Shendi, Sudan, to respond to MCIs amidst ongoing conflict.

Methods: A cross-sectional survey was conducted among 77 healthcare professionals at a teaching hospital in a borderline conflict zone, including nurses, house officers, medical officers, and registrars. The survey assessed factors such as demographic characteristics, training and preparedness, perceived preparedness, psychological preparedness, communication efficiency, inter-team coordination, and suggestions for improvement. Data were analyzed using SPSS to identify correlations in MCI preparedness.

Results: The mean age of the participants was 27 years (± 5.8), and the majority were female (80.5%). Nurses comprised the largest group (46.8%), and most participants had less than three years of experience (87.1%). Only 36 participants (46.8%) had formal MCI training, and 58.4% of all participants deemed the training inadequate. Confidence varied significantly between roles, with nurses and registrars feeling more prepared than house officers ($p = 0.001$). Equipment preparedness was low, with only 13% of participants feeling adequately equipped. Although 57.1% were aware of MCI protocols, only 40.3% found them effective. Key challenges included inadequate training resources, poor coordination, and high patient volume. Psychological preparedness was lacking in 66.2% of respondents. Communication was more effective during MCIs (66.2%) than during regular operations (39%). Participation in training was associated with higher confidence ($p < 0.05$).

Conclusion: The study revealed significant deficiencies in training and preparedness for mass casualty incidents. Addressing gaps in training, resource allocation, and equipment readiness is essential for improving emergency response capabilities and enhancing patient outcomes in conflict zones.

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HUMANITARIAN AND POPULATION HEALTH

Support from Across the World: The Western Regional Alliance for Pediatric Emergency Management's (WRAP-EM) Virtual Mental Health Reach Back Team

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Summary: The Western Regional Alliance for Pediatric Emergency Management (WRAP-EM) has been actively supporting international disaster responses through its Mental Health Virtual Reachback Team model. WRAP-EM employs an evolving consultative collaborative model, drawing from the National Children's Disaster CONOPS. This involves meeting with the requesting organization to identify critical mental health response and recovery needs, recommending strategic approaches, and providing tactical support and resources to facilitate implementation. The MH Reachback Team offers evidence-based tools and processes via consultation, technical assistance, and training to disaster response governmental and tribal entities, disaster relief NGOs, and independent agencies.

In response to the catastrophic flood disaster in Derna, Libya, WRAP-EM provided consultation and training to establish a mental health response. Over 10,000 children have been triaged using the PsySTART system, and ongoing efforts are underway to build capacity within the community to meet these needs, including training Libyan MH providers in Stepped Trauma-Focused Cognitive Behavioral Therapy appropriate for low-resource environments.

Additionally, WRAP-EM has supported the Gaza Health Initiative, a multinational effort focused on rebuilding Gaza's healthcare system for children affected by conflict. Medical teams deployed to Gaza received training in trauma-informed pediatric care, as well as the Anticipate-Plan-Cope/PsySTART Responder medical provider resilience-building system. Training has been conducted for providers from multiple countries, including the United States, Canada, the United Kingdom, Jordan, Egypt, and Australia.

This approach for addressing mental health needs of youth following disasters requires a multi-disciplinary team with expertise in Emergency Management, Mental Health Clinicians with knowledge and understanding of the disaster behavioral health literature, experience in disaster response in both high and low resource environments, and a flexible approach that can be adapted to the culture and community. The capacity to engage with impacted communities to inform planning for mental health surge response from a systems and clinical focus is key.

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Challenges Faced by Displaced Palestinian Women Living in Tents

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Summary: The purpose of this presentation is to highlight the challenges refugees and Internally Displaced People (IDP) face when living in tents. These include lack of privacy, safety, and security for families and children; inadequate/insufficient water sources leading to hygiene issues and infectious disease outbreaks; and extremes in temperature exacerbating medical conditions. This presentation will provide an awareness of how these challenges impact Palestinian women, as well as highlight unique challenges they face as it pertains to sanitation, cultural norms, access to care, and obstetric complications. Resiliency strategies to combat these challenges, as well as the lifetime implications, will be shared from the personal lived experiences of Palestinian women.

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Antenatal Care in Wartime: A Report from the Thai-Myanmar Border

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Summary: Pregnant mothers in wartime are often one of the most affected populations due to reduced access to healthcare services. The recent political situation in Myanmar, since its coup in 2021, has forced many pregnant women to seek healthcare services in and out across the borders of its neighboring countries.

This study aims to describe antenatal care (ANC) undertaken in different settings along the Thai-Myanmar border in the last five years. Collected data included the number of ANC, attributions of the pregnant women, gestation stage, and pregnancy outcome. The results of anti-HIV screening were also collected, with the idea that this data will give us additional information on pregnant women's healthcare service needs. Thai regulations state that all pregnant mothers should undergo infection screening two times, once at the first ANC visit and once at a later gestation stage. The study encompasses a variety of healthcare service settings: a government hospital, a private non-profit clinic, and others.

The government hospital reported provisionally two confirmed HIV cases out of 1169 screening tests undertaken in one year, 2023-2024, which gives a crude seroprevalence of HIV 0.17%

(95%CI 0.04-0.40). All confirmed HIV cases were migrants. A non-profit private clinic reported a case that tested positive for HIV screening in the last five years, but it turned out to be a false positive.

Due to the limitation of data, the study does not detect any evidence of war's impact on maternal healthcare. The study suggested, however, that infection screening tests, including anti-HIV, are regularly undertaken at ANC in the Thai-Myanmar border area, regardless of their immigration status. It also indicates the need for careful multi-language counselling for the result of HIV screening, where a high false-positive rate is expected.

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Balancing Infection Control and Parental Presence in High-Consequence Infectious Disease Care for Pediatric Patients: A Tabletop Exercise

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Summary: Parental presence is a critical element in pediatric care, providing emotional support that can significantly enhance a child's well-being. However, in cases involving High-Consequence Infectious Diseases (HCIDs), this need must be carefully weighed against infection control imperatives to prevent pathogen transmission. This tabletop exercise, titled "Parental Presence During Pediatric HCID Care," was developed to simulate and address the complex, real-world decision-making that healthcare providers face when balancing these needs in high-stakes environments.

Designed for a small team consisting of three participants—representing a pediatric healthcare provider, an Infection Control Officer, and a Parent—and three facilitator presenters, this exercise introduces a scenario in which a young child with a suspected HCID is in isolation, and the parent is distressed and requesting bedside access. Through structured discussion and guided role-play, participants explore initial considerations for allowing or restricting parental presence, assess risks, and develop a preliminary action plan that balances infection prevention with family-centered care.

The drill provides an immersive learning experience that highlights the importance of interdisciplinary collaboration and clear communication in HCID care, encouraging participants to examine practical measures (e.g., PPE, restricted visitation, virtual communication) and ethical challenges (e.g., the psychological needs of both child and parents). This phase concludes with a facilitated debrief, allowing participants to reflect on their decisions and insights gained.

Presented as an interactive tabletop, this exercise would offer conference attendees a hands-on opportunity to engage with and refine strategies for family-centered care within infection control constraints, fostering an understanding of best practices that can be adapted across healthcare settings.

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Healthcare Access Barriers Encountered by Vulnerable People With Disabilities During the COVID-19 Pandemic

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Introduction: The WHO estimates that 16% of the world population (1.3 billion) has a significant disability. As the global population of people with disabilities (PWD) increases and ages, the percentage of this vulnerable population will increase. During disaster preparedness planning, the special needs of PWD must be considered. The key aim of this project was to identify barriers to access to healthcare for PWD in Region IX of the US (AZ, CA, Guam, HI, & NV). A subset of the project examined barriers to COVID-19 healthcare access for PWD during the pandemic.

Methods: A mixed methods approach included both key informant interviews and focus groups (N = 60) of healthcare workers (HCW) and PWD to inform the development of survey instruments, which asked about access to healthcare in general and also during the COVID pandemic. Survey results for healthcare services during the COVID-19 pandemic are reported here (N = 688).

Results: For HCW (N = 359), nearly one-fourth (23.9%) reported inability to make modifications to help PWD receive the COVID-19 vaccine; 21.1% reported barriers to making modifications so PWD could receive COVI-19 care during the pandemic; about one-half (49.3%) of HCWs used telehealth to care for PWD, and of these, 43.2% experienced difficulties with telehealth processes and technology. PWD (N = 329) also reported severe challenges. One-quarter (24.9%) reported needing modifications to receive the COVID-19 vaccine, and of these, 34.1% encountered barriers to receiving a COVID-19 vaccination. During the pandemic, more than half (55.5%) of PWD used telehealth services, and 22.7% reported problems with using the telehealth technology. Overall challenges for healthcare access included inadequate facility accessibility, lack of adaptive exam equipment and furniture, short encounter time, communication technology problems, lack of transportation, and low HCW knowledge about caring for PWD.

Conclusion: Understanding these needs and barriers can inform future planning to ensure PWDs have equitable healthcare access during all disaster events.

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The Significant Role of Community Medicine in Times of Emergency

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Introduction: The Israeli healthcare system was responsible for spearheading the battle against SARS COV-2 as a medical necessity, concurrently confronting the imperative to fully utilize all accessible medical resources, encompassing hospitals and community medicine facilities. The complete and effective management of patients, particularly during emergencies, is of utmost importance for the Israeli nation. This study endeavors to elucidate the essentiality of community medicine during emergencies, exemplified by the COVID-19 pandemic.
Methods: A cohort of thirteen influential officials from the Israeli healthcare system, actively leading the nation's response to COVID-19, underwent in-depth interviews. These interviews were subjected to thorough scrutiny by a panel of peers. The participants were accessed through in-person meetings or virtual interactions via Zoom. The participants were given the questionnaire in advance, enabling them to familiarize themselves with its format. Subsequently, employing ATLS.In TI 22, six themes emerged. Among these themes, one particularly highlighted the significant role of community medicine as an indispensable component of the medical response, particularly in emergencies. These themes were derived by identifying recurrent concepts present within the quotes provided by the participants.
Results: Numerous compelling instances were unveiled, demonstrating the utmost importance of community-level medical care during the COVID-19 pandemic. All thirteen interviewees explicitly emphasized the impact of medical teams operating within community medicine, substantiating their viewpoints with concrete examples. The primary discovery revolved around the Israeli HMO's capacity to provide hospitalization services at patients' homes and to effectively reduce the number of individuals seeking emergency room care. In addition, HMOs were seen as significant in fostering public trust.
Conclusion: This study provides a comprehensive understanding of the approach employed by the Israeli healthcare system in tackling the pandemic, accompanied by recommendations about the integration of community medicine. The abundance of lessons presented in this study may also be relevant to other countries, suggesting the potential for broader application.

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The Role of Nurses in Caring for Displaced Pediatric Populations

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Summary: Pediatric patients face specific challenges when they are displaced as a result of war. Clinicians must understand the impact of generational trauma on pediatric patients as well as their lack of childhood livelihood, as it pertains to their future. Mitigation strategies, including how to support displaced populations and educate them on disaster preparedness while they are still traumatized, can be challenging. Specific examples from first-hand experiences with children that have been impacted by generational trauma will be shared, as well as an in-depth discussion on how to break the cycle and the importance of pediatric-specific mental health support.

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A Novel Operational Protocol for the Establishment of a Medical Facility for Receiving Returning Hostages: Structure, Process, and Outcomes

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Introduction: On October 7, 2023, Hamas carried out an unprecedented attack on the State of Israel and kidnapped 251 people into captivity in the Gaza Strip. Several months later, as part of a humanitarian exchange deal, 105 hostages were released in five phases and admitted to one of six hospitals throughout the country for treatment. Shamir Medical Center (SMC) was one of these facilities. This study aims to describe the structure, process, and outcomes of establishing a comprehensive, multi-step operational protocol for receiving hostages returning from captivity.
Methods: Description of the process of preparing SMC as a receiving center, the establishment of procedures for implementation of the medical protocol, and the assessment of multi-disciplinary team preparedness and implementation, and outcomes in an institutional protocol.
Results: Twenty-four returning hostages were received at SMC. Social workers, dietitians, and translators were used by 100% of the majority group of returning hostages from the same country of origin, and the sole individual from the other country of origin utilized a dietitian, social worker, ENT consultations, and a hearing test. Among the majority group, orthopedic and dermatological consultations were utilized by 17.4%, and 13% received an ENT consultation. Of the administered imaging, 13% received a chest X-ray, 8.7% received a limb X-ray, 17.4% received a head CT scan, and 4.3% received an abdominal CT. In addition, 21.7% were provided with antibiotic therapy. Protocol efficacy was measured by assessing the time to various operational aspects of protocol implementation and medical procedures, such as the mean hours to room assignment, primary physician evaluation, and social worker session. No correlation between age and operational variables was found.
Conclusion: This novel operational protocol was successfully implemented and may serve as a framework for managing similar unpredictable sensitive events in the case of future need.

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Risk Factors of Short-Term Death in Nursing Home Residents After a Call to an Emergency Medical Service

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Introduction: Nursing homes regularly call emergency medical services (EMS) for residents with life-threatening emergencies. Most of them are transferred to an emergency room (ER). In many cases, these are end-of-life situations as the patient's death seems imminent, and transfer to the ER is likely to be uncomfortable and unnecessary.
This study aimed to identify, among NH residents, risk factors of short-term death (48 hours) at the time of the EMS call.
Methods: This study included all incoming calls for NH residents to an EMS between May 9, 2022, and May 8, 2023. Age, gender, dependency level, vital signs, destination (left on scene or hospitalized), and vital status at 48 hours were collected. Comparisons were made using Chi-2 tests and analyses of variance. Multivariate analyses were performed using top-down stepwise logistic regression.
Results: One thousand eight hundred and twenty-two patients were included. The average age was 87.6 years. Sixty-six percent were very dependent. Three-quarters of calls resulted in hospitalization. Patients left on scene were significantly older (89 years) and more dependent (73%) than those hospitalized (respectively 87 years and 59% – $p < 10^{-3}$). At 48 hours, 20% of patients were left on scene, and 16% of hospitalized patients had died. Five risk factors of short-term death were identified: initial oxygen saturation ≤ 90%, initial blood pressure < 70 mmHg, respiratory distress as the main chief complaint, being very dependent, and age ≥ 90 years.
Conclusion: Identifying risk factors of short-term death in NH residents could enable EMS to more often consider keeping the patients on scene with appropriate palliative care. This could be achieved with the help of a clinical prediction tool, yet to be validated by other surveys.

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Navigating Generosity of Medicines (Gen-MED): Characterizing Complex Relationships of Medication Donations Through a Proposed Stakeholder Analysis

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Introduction: Inappropriate medicine donations during health emergencies remain a global challenge, particularly for resource-limited nations. Despite its prevalence, little research has explored this issue from an interdisciplinary or systems perspective. Understanding the motivations, effects, and outcomes of these donations is essential for developing strategies to mitigate negative consequences and build local capacity. A deeper understanding of the complexity and interconnectedness of the problem is necessary before solutions can be proposed.
Methods: This study explores the stakeholders involved and the complexity of their relationships regarding medicine donations in response to health emergencies for resource-limited countries. It aims to identify, characterize, and map key stakeholders involved in the donation process—including governments, organizations, charities, pharmaceutical companies, and community organizations—across six countries: Japan, Canada, the United Kingdom, Nigeria, Rwanda, and Uganda.
Results: The study follows a three-step stakeholder analysis framework. First, stakeholders will be identified using a snowball sampling method, leveraging partner organizations to ensure diverse perspectives. Second, an online questionnaire will assess each stakeholder's influence, attitudes, interests, capacity to contribute, and perceived barriers to participation in the medicine donation process. The questionnaire will also evaluate their desired level of involvement and identify other key players within the donation process. Third, stakeholders' attributes will be mapped in a matrix, categorizing them by their levels of influence and interest. Stakeholder relationships (i.e., level of collaboration) will be analyzed using social network analysis (SNA).
Conclusion: This analysis will provide insights into the key actors and dynamics in medicine donation, offering a foundation for future studies aiming to investigate and curb inappropriate donations in future health emergencies.

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Preparing US Hospitals for Pediatric Reunification through an Educational Series: A Pilot Program

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Introduction: Pediatric reunification is a critical component of hospital disaster planning. Timely reunification has shown improved outcomes for children, yet many hospitals fail to have a plan. The U.S. Administration for Strategic Preparedness and Response funded Region V for Kids, a Pediatric Center of Excellence for standardizing pediatric disaster preparedness. A Reunification Workgroup was formed within this center to determine if an educational series would improve pediatric reunification plans for U.S. hospitals.
Methods: This pilot project is a mixed-methods study including nine children's hospitals from six states. Hospitals were pre-surveyed in May 2023 and post-surveyed after completion of the educational series in July 2024. The series comprises five modules: Patient Tracking, Facility Logistics, Information Sharing, Plan Activation, and Recovery. Modules were developed from deficits revealed via a gap analysis from the presurvey and virtually presented each month from January through May 2024 to emergency managers and physicians. Sessions were also

recorded for self-guided learning. The audience was polled live for immediate feedback during each virtual session.
Results: Live polling questions included presentation helpfulness, speaker knowledge, presentation content, and session expectations. The post-survey solicited information on reunification knowledge enhancement, relevancy, and changes to clinical practice, the virtual experience, independent learning opportunities, and ease of the online learning platform. Using a scale from 1 to 5, with 1 being strongly disagree and 5 being strongly agree, all modules averaged above 4, with a range of 3 to 5 in both polling and post-survey questions. Descriptive results indicated that modules were concise, informative, relevant, and practical.
Conclusion: This pilot is the first educational series developed for standardizing and improving pediatric reunification plans in the U.S. The project used knowledge deficits to improve education, strategy, and guidance for reunification planning. Similar educational series should be considered in pediatric reunification development for hospitals globally.

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Installing Pedestrian-Separated Traffic Lights: An Effective Measure to Enhance Pedestrian Safety

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Introduction: Japan is widely regarded as one of the safest countries in the world. However, there are still fatal pedestrian accidents with turning traffic. The severity of the trauma tends to be high in pediatric and elderly patients. To protect these vulnerable groups, pedestrian-separated traffic lights can be an effective traffic measure. The National Police Agency has promoted the installation of the lights for more than 20 years, but it has made little progress. The rate of installation of the lights is about 4.9% in Japan. This study aims to assess the effectiveness of pedestrian-separated traffic lights.
Methods: The crossings that were installed with pedestrian-separated traffic lights between 2016 and 2020 in Tokyo were identified. The traffic accident data at those crossings from 2014 to 2022 was obtained by the Tokyo Metropolitan Police Department. The data was analyzed in each age group to evaluate the effectiveness of the pedestrian-separated traffic lights.
Results: At the crossings where pedestrian-separated traffic lights were installed, the number of pedestrian accidents decreased by 69%. Notably, pedestrians up to 12 years old and those 65 years or older have not been involved in any traffic accidents since the installation of the pedestrian-separated traffic lights.
Conclusion: Installing pedestrian-separated traffic lights is an effective traffic measure to reduce pedestrian traffic accidents, especially in vulnerable groups.

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Problems in the Primary Triage of Children with Medical Complexity in Disaster

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Introduction: Children with medical complexity (CMC) are defined as disabled children who are on a ventilator or require medical care to carry out daily life under Article 56 of the Child Welfare Law in Japan. In Japan, it is estimated that there were about 20,000 children aged 0 to 19 living at home under medical care in 2023. The mortality rate of persons with disabilities in the Great East Japan Earthquake was twice that of healthy persons, and it was reported that the mortality rate was higher among those living at home than among medical facility residents. Responding to disasters for CMC has become an urgent issue.
Methods: Primary triage was performed based on information on the normal conditions of CMC aged 1 to 16 who were treated at Tottori University Hospital in 2018. In this study, we triaged 69 children with medical care needs aged 1 to 16 years under normal conditions using Jump START and START methods.
Results: There were 69 affected children (boys: girls 39: 30). The median age was 9.0. The reasons for medical healthcare needs were cardiac disease in 14, congenital anomaly syndrome in 13, perinatal disorders in 12, chromosomal abnormalities in 10, sequelae from trauma in 4, muscle diseases in 3, otolaryngological diseases in 3, metabolic diseases in 3, respiratory diseases in 2, and oncological diseases in 2. The triage results showed that one was in the expectant group, 24 were in the immediate treatment group, 12 were in the delayed treatment group, and 32 were in the minor group. Among the children triaged to Category III, 14 required oxygen administration, including 4 with noninvasive ventilators and 1 with a tracheostomy.
Conclusion: It is difficult to triage CMC appropriately using the START method and Jump START method, and it is necessary to develop a triage method specifically for CMC.

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Pediatric Considerations for Response to Mass Casualty Incidents

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Summary: Caring for children during mass casualty incidents (MCIs) presents unique challenges that differ significantly from adult care. This presentation addresses the special

considerations essential for pediatric patients, emphasizing the distinct injury patterns observed in children and the necessity for age-specific equipment and medications. It is crucial to create an environment that is as appropriate as possible under the given circumstances to mitigate the physical and psychological impacts of the incident on young survivors.

Children's experiences during MCIs can leave lasting physical and psychological effects, shaping their development. Therefore, clinicians must be equipped with comprehensive knowledge of pediatric medical care, including medication dosing and age-appropriate treatments. Their psychological care should not be forgotten while caring for physical ailments, understanding community resources, and the mental health repercussions associated with traumatic events are important.

A scoping review of the literature was conducted to identify critical themes in pediatric care during MCIs. The analysis revealed five key considerations:

1. Clinician Knowledge and Skills: Training specific to pediatric care in emergency settings is vital for an effective response.
2. Pediatric Supplies: Ensuring the availability of appropriate supplies tailored for pediatric use, including medical devices and sized equipment, is essential for effective treatment.
3. Medications and Vaccines: Understanding pediatric formulations, dosage forms, and countermeasures is crucial to ensure safe and effective pharmacological interventions.
4. Mental Health: Recognizing the mental health impact on children post-MCI is essential for providing holistic care and support.
5. Community Resources: Awareness of local resources can enhance recovery and support for affected children and families.

This presentation advocates for evidence-based training and resources to address the unique needs of pediatric patients during mass casualty incidents, ultimately enhancing their care and recovery.

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A Nurse and Pharmacist Collaborative Approach to Providing Pediatric Care During Disasters

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Summary: A coordinated and effective response is critical in disaster scenarios, particularly when addressing pediatric patients' unique health care needs. This abstract presents a collaborative approach between nurses and pharmacists to enhance pediatric care during disasters, emphasizing the importance of interdisciplinary teamwork in ensuring optimal outcomes for children.

Nurses play a pivotal role in the initial assessment and management of pediatric patients, providing direct care and identifying the specific needs of children affected by disasters. Their expertise in pediatric assessment allows for the timely recognition of injuries and medical conditions requiring immediate attention. Meanwhile, pediatric pharmacists bring specialized knowledge in medication management, ensuring that appropriate dosing and therapeutic options are available for young patients, especially given the physiological differences between children and adults.

This presentation will highlight key strategies for fostering collaboration between nurses and pharmacists during disaster response. We will explore effective communication techniques, shared protocols for medication administration, and joint training exercises to enhance preparedness. Case studies will illustrate successful nurse pharmacist partnerships in disaster settings, showcasing how their collaborative efforts can streamline patient care, improve medication safety, and reduce errors in drug administration.

Moreover, we will discuss the importance of establishing clear roles and responsibilities, facilitating real-time consultation, and leveraging the strengths of each discipline to create a comprehensive care plan tailored to the pediatric population. By promoting a unified approach, we aim to address the unique challenges faced by children during disasters, ultimately improving health outcomes and ensuring that their specific medical and emotional needs are met. This collaborative model not only enhances the quality of care delivered during emergencies but also sets a precedent for future interdisciplinary practices in pediatric disaster management.

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Extreme Heat and Older Adults: Results from a Nationally Representative Survey

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Introduction: Extreme heat is an increasing health threat for older adults in the United States. Older adults are more likely than younger people to experience health effects during extreme heat events, often because of age-related physiological changes and social factors. The goal of this study was to understand experiences of extreme heat among older adults, including perceptions of current health risks and concerns about the impact of climate change on future generations.

Methods: Data were analyzed from the August 2024 National Poll on Healthy Aging, a recurring nationally representative survey of community-dwelling adults aged 50 and older. Respondents were asked about experiences with and concerns about climate change and health, particularly extreme heat. Descriptive statistics characterized participants' extreme heat experiences and levels of concern about the impact of climate change on health.

Results: Of 3,463 respondents, 62.6% (n = 2,168, 95% CI 60.6 - 64.6) reported experiencing an extreme heat event in the past two years. 27.0% (n = 923, 95% CI 25.8 - 28.2) reported feeling very concerned about the effects of extreme heat on their health. Concerns were highest among those living in the Southern region of the United States (33% n = 1,091; 95% CI 30.1 - 35.9). Only 6% of the sample reported that their health care provider had

discussed preparedness actions for climate-related health emergencies with them (95% CI 5.3 - 6.7). Overall, 42.7% (95% CI 39.9 - 45.6) reported feeling very concerned about the effects of climate change on the health of future generations.
Conclusion: A significant proportion of older individuals in this study reported experiencing extreme heat events and expressed heightened concern for their health with these events. Few older adults reported receiving guidance from their healthcare providers on preparing for such events. Respondents also reported high levels of concern about the impacts of climate change on future generations.

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Motor Vehicle Collision (MVC) in Israel's Pediatric Population Through the Lens of Disaster Medicine

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Introduction: Motor vehicle collisions (MVCs) are a major public health concern worldwide and have significant implications for disaster medicine.
Methods: A retrospective epidemiological analysis of MVC-related data was conducted using a database of the Israeli Central Bureau of Statistics. The study population included all children involved in MVCs in Israel between January 1, 2013, and December 31, 2022.
Results: A total of 94,412 children aged 0-14 years were involved in MVC in Israel over the study period. Of these, 18,995 (20.1%) required hospitalization and treatment. The highest number of casualties occurred among individuals aged 10-14 years (44%), followed by 5-9 years (38%), 2-4 years (14%), and 0-1 years (4%). Pre-hospital and field treatment and evacuation were provided by Basic Life Support ambulances in 6,030 (31.7%) of the cases, mobile intensive care unit (MICU) treatment and evacuation was used in 2,766 (14.5%) of cases, and air transport to a trauma center was utilized in 109 cases (0.6%), military transport occurred in 22 cases (0.1%) of cases. Overall, 13,566 pediatric casualties had an Injury Severity Score (ISS) of 1-8 (71.3%), 3381 had an ISS of 9-15 (17.7%), and 1148 had an ISS of 16-24 (6%). Six hundred and ninety children had ISS OF 25-49 (3.6%), and 75 had ISS of 50-75 (0.4%). A total of 586 deaths occurred on the scene, and 2143 children were admitted to intensive care units.
Conclusion: MVCs resulted in a relatively high number of casualties and deaths during the 10-year study period. Efforts should be made to reduce the burden of MVCs on the Israeli childhood population.

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Unyielding Spirit: Resilience in the Shadows of Israel-Hamas War

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Introduction: Resilience is "the capacity to function (during) and recover successfully from adversities; 'bounce back' or even 'bounce forward'." Resilience is vital for coping with emergencies, as it was identified as a protective factor against distress and enhances compliance with guidelines issued by authorities.
Methods: A longitudinal study was conducted, measuring resilience (individual, community, and societal), positive (hope, morale, and social cohesion), and negative (sense of danger, distress) coping mechanisms periodically, five times during the protracted war between Israel and Gaza. Data were collected using structured, quantitative, validated scales. Resilience and coping mechanisms were compared across the five measurements and between evacuated versus non-evacuated populations.
Results: Individual resilience was higher in the fifth compared to the first measurement, while community and societal resilience decreased consistently throughout the war. Morale rose while hope and social cohesion significantly decreased between measurements. The evacuated population reported significantly lower levels of resilience, social cohesion, hope, and morale, and higher levels of distress and sense of danger compared to the average scores of the overall population. Hope was the best predictor of societal resilience among the overall population, while the level of 'support for the government' was found to be the best predictor among the evacuated population.
Conclusion: Individual resilience was higher in the fifth compared to the first measurement, while community and societal resilience decreased consistently throughout the war. Morale rose while hope and social cohesion significantly decreased between measurements. The evacuated population reported significantly lower levels of resilience, social cohesion, hope, and morale, as well as higher levels of distress and sense of danger compared to the average scores of the overall population. Hope was found to be the best predictor of societal resilience among the overall population, while the level of 'support for the government' was found to be the best predictor among the evacuated population.

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When Wildfires Discriminate: Exploring the Intersection of Health Inequities and Severe Pediatric Respiratory Outcomes

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Introduction: Wildfires are an increasing threat, exposing two billion people globally to harmful air quality. Children with higher outdoor exposure, increased air intake relative to body weight, and developing lungs are particularly vulnerable to wildfire smoke. This study examines the impact of socioeconomic status (SES) on severe lung disease exacerbations in critically ill children during wildfires.

Methods: This was a retrospective cohort analysis of 2,417 children, aged 0-29 years, admitted to a quaternary Pediatric Intensive Care Unit for acute respiratory disease during wildfires from 2016 to 2023. Data were sourced from Virtual Pediatric Systems, Social Deprivation and Vulnerability Indices, Fire Information for Resource Management System, and Air Quality System, and merged using zip codes.
Wildfire-related pollution exposure was defined as wildfire presence within 100 miles on satellite imagery and PM2.5 levels at least one standard deviation above the annual mean in the 10 days before admission.

SES was categorized using the Area Deprivation Index (ADI), Social Vulnerability Index (SVI), and Child Opportunity Index (COI), with high and low SES defined as the highest and lowest quintiles. Fisher's exact test and Mann-Whitney U tests compared outcomes between SES groups.
Results: Using COI, patients with low SES had a significantly longer ICU LOS (1.3 days, $p < .001$) and higher absolute risk of requiring mechanical ventilation (28%, $p < .001$) during wildfires. The risk of mortality using PIM3, but not PRISM3, was also significantly elevated (0.6%, $p < .001$) for low SES patients. Age and gender assigned at birth were similar between the low and high SES groups across all indices. These findings were consistent across ADI and SVI.
Conclusion: This study highlights disparities in outcomes for children from low SES backgrounds during wildfires, with low SES linked to more severe respiratory outcomes. Additional research and greater public health awareness can inform targeted interventions and disaster preparedness to protect these vulnerable populations.

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The Establishment of a Clinical Protocol for Hostages Returning From Captivity

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Introduction: Few studies have reported on the clinical care of hostages released from captivity. This study aims to describe the establishment of a clinical protocol for hostages returning from captivity.
Methods: This study describes the process of creating procedures for the implementation of the clinical protocol itself. The study was conducted at Shamir Medical Center (SMC) and assessed the outcomes of 24 returning hostages. Data collected included the clinical protocol for receiving the returning hostages and the returning hostages' demographics and clinical data.
Results: All returning hostages were foreign workers, and all but one were from the same nationality. The majority group of 23 returning hostages from the same nationality received testing for Q-fever, Hepatitis B, and HIV. Orthopedic, dermatological, and ear, nose, and throat consultation, chest and limb X-ray, head and abdominal CT scans, and antibiotics were also utilized by the majority. The returning hostage from a different nationality of origin utilized consults with an ENT, hearing test, and tests for Q-fever, urine toxicology, Hepatitis B, and HIV. Among the majority group, the mean percentage loss of body weight was 10%±10%. No correlation was found between age and change in weight (rho = -0.227; p=0.350). In addition, 17.4% tested positive for Q fever, 30.4% tested positive for Hepatitis B, and 13% tested positive for a sexually transmitted disease. They spent a mean of 5±1 days hospitalized. The sole hostage lost 15% of his body weight, tested positive for Q fever, and spent three days hospitalized. Consults with social workers and dietitians, translators, and Covid-19 tests were used by all returning hostages.
Conclusion: This novel clinical protocol was successfully utilized in real time and may serve as a framework for the complex and sensitive clinical management of returning hostages, in case of need.

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The Impact of the Coronavirus Pandemic on Long-Term Trends of Depressive and Anxiety Symptoms Among Adolescents (12-24): A Meta-Analysis

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Introduction: In recent decades, depression and anxiety disorders have increased among adolescents. The recent COVID-19 pandemic had an impact on the total population either directly through infections and the associated threat of infection or indirectly through the countermeasures taken to limit the spread of the disease. Reviews indicate a deterioration of mental health during the COVID-19 pandemic, specifically among adolescents, yet fail to link this to pre-existing trends. Building on these findings, this meta-analysis aims to investigate if and how the COVID-19 pandemic has impacted the long-term prevalence of depressive and anxiety symptoms among adolescents.
Methods: A systematic search was conducted using PubMed/Medline, PsycINFO, and Embase. A multilevel meta-analysis used continuous and dichotomous data extracted from the studies to examine longitudinal trends.
Results: The search yielded 4,750 unique articles. After full-text screening, nine articles were included.
Most studies found increasing rates of anxiety and/or depression symptoms among the youth before the pandemic (7 out of 9). The patterns found during the pandemic were diverse: in five studies, pre-existing trends in depressive and anxiety symptoms intensified, two studies reported a similar increase in symptoms (in line with pre-existing trends), and two found no increase during the pandemic.

The meta-analyses demonstrated that depression and anxiety symptoms during the pandemic were not significantly different from (already rising) levels before the COVID-19 pandemic. Substantial variance was also observed at the measurement

and study levels, highlighting extensive heterogeneity behind this estimate, both across and within studies.
Conclusion: Although findings show that a worsening of existing trends during the pandemic was not universally visible, the results of most studies do support this hypothesis. More longitudinal studies based on random general population samples are needed to effectively monitor youth mental health trends and to ascertain the true impact of crises.

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The Impact of COVID-19 Countermeasures on Care Use for Mental Health Complaints: A Longitudinal General Practice Registry Study

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Introduction: The COVID-19 pandemic and the countermeasures taken threatened population health and well-being. This study, which is part of the Integrated Health Monitor COVID-19, examined the impact of five different restrictive countermeasures (lockdowns, work-from-home advice, mandatory work-from-home rule, school closures, and closures of sports venues) implemented in the Netherlands during the COVID-19 pandemic on general practitioner (GP) contacts for mental health complaints.
Methods: GP contacts were examined for anxiety, depression, fatigue, and irritability from electronic patient records. Data were derived from the Nivel Primary Care Database. This database holds records of 400 practices with 1.7 million registered patients and is representative of the Dutch population. Periods with and without measures (we examined the period from 2018 until 2022) were compared using Poisson regression models, correcting for seasonal effects, age, and gender.
Results: Weeks with specific restrictive measures were accompanied by increased GP consultations. The strongest effects are visible for the closure of sports venues and lockdowns. Closure of sports venues was accompanied by increased contact for anxiety and depression among all age groups. GP contacts for depression increased among 5-14 and 15-24 year-olds during lockdowns. The work-from-home advice was accompanied by increases in contacts for fatigue and irritability in the same groups, and an increase in irritability among older age groups. The mandatory work-from-home rule was accompanied by increases in irritability, particularly among 45-74 year-olds. Unexpectedly, during school closures, GP contacts for mental health problems did not change.
Conclusion: The study suggests that adolescents and young adults were most strongly affected by several restrictive measures, especially the closure of sports venues and lockdowns. Caution is appropriate when assigning causality, however. Countermeasures often overlapped in time, as governmental responses during periods of high infection rates typically consisted of a multi-pronged approach. This makes it difficult to discern the individual effects of specific countermeasures.

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The Impact of the COVID-19 Pandemic on Migrant Women in Milan, Italy: Insights from Qualitative Studies Engaging Migrant Women and Key Informants

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Introduction: During the COVID-19 pandemic, migrants and women were among the most vulnerable groups. By adopting an intersectional lens, it is possible to emphasize how migrant women (MW) faced specific impacts. This study aimed to explore how MW living in Milan, Italy, experienced the COVID-19 pandemic, particularly regarding their social and health needs and access to care.
Methods: Two qualitative studies using semi-structured interviews were conducted to investigate the impact of the pandemic on MW regarding a wide range of experiences, by engaging them directly and key informants (KI) working in third sector organizations and public hospitals.
Results: Nineteen MW and twenty-seven KIs were interviewed. The pandemic significantly worsened MW's economic situation, with service shutdowns hindering their regularization process. Bureaucratic barriers increased reliance on NGOs, which were also MW's preferred entry point to the national healthcare system before and during the pandemic. KIs reported an increase in gender-based violence, while requests for assistance declined. Despite vaccine skepticism, most MW got vaccinated because of its de facto mandatory nature. A fatalistic view of the pandemic and disasters was prevalent among MW, with many perceiving them as inevitable events and believing that protective measures are futile. Distrust towards the national healthcare system, institutions, and media was common among MW. While KIs noted significant marginalization among MW, the women themselves considered social isolation one of the least significant impacts and did not see themselves as particularly vulnerable.
Conclusion: Establishing trust in advance is essential for effective disaster response. Disaster risk management should adopt an intersectional approach and consider diverse cultural perspectives on preparedness. Although specific barriers faced by MW were identified, their migratory identity seems to outweigh their gender identity. This project was supported by Fondazione Cariplo (ref. 2022-1447) and conducted in the framework of the International PhD in Global Health, Humanitarian Aid, and Disaster Medicine (UPO).

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Wildfires Unveil Existing Socioeconomic Disparities in Critically Ill Children

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Introduction: Wildfires are an increasing global threat, exposing over 2 billion people annually to hazardous air quality.

Children from low socioeconomic status (SES) regions often experience worse respiratory outcomes during wildfires compared to their higher SES peers. However, direct data on wildfire impacts remains limited. This study examines whether wildfires exacerbate respiratory health disparities compared to non-wildfire periods.

Methods: A retrospective cohort study of 2,417 patients aged 0-29 years admitted to a quaternary Pediatric Intensive Care Unit for acute respiratory failure from 2016-2023 was conducted. Data were collected from Virtual Pediatric Systems, the Area Deprivation Index (ADI), Fire Information for Resource Management, and the Air Quality System, and merged using zip codes.

The Wildfire cohort included children with a wildfire within 100 miles, confirmed by satellite, and PM2.5 levels in the 10 days before admission exceeding 1 standard deviation above the annual mean. Non-wildfire patients were all other respiratory failure admissions in the same period. SES was defined by ADI quintiles, with low and high SES representing the lowest and highest quintiles. Statistical analyses included Fisher's exact test, Mann-Whitney U test, and logistic regression.

Results: During wildfires, children from low SES backgrounds had a significantly higher risk of intubation than in non-wildfire times (29% vs. 13%, p = .003), a difference not observed in high SES children (8% vs. 10%, p = 0.49). Logistic regression showed that wildfire exposure and low SES together increased intubation odds (OR = 2.7, p = .04). Higher Pediatric Index of Mortality 3 (PIM3) scores also raised intubation risk (OR = 1.3, p < .001) while other investigated demographic factors did not.

Conclusion: This study underscores the elevated respiratory risks for low-SES children during wildfires. Additional research and greater public health awareness can inform targeted interventions and disaster preparedness to protect these vulnerable populations as wildfire frequency increases.

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Management of Vulnerable Population Needs in Disaster: The Use of Minimum Initial Service Package (MISP) Components in the Management of Reproductive Health Subcluster During Cianjur Earthquake Response in November 2022

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Summary: An earthquake with a magnitude of 5.6 on the Richter scale on November 21, 2022, in Cianjur District, West Java Province, Indonesia, with a depth of 1 km from the surface caused by the Cugenang Fault. Approximately 114.683 people are affected and are IDPs. Of 47 primary health centers in Cianjur, 13 health centers experienced significant damage. The reproductive health subcluster is one of the health cluster subclusters that is greatly needed to ensure the needs of vulnerable populations are met.

This field report was written using an observational descriptive approach, where the authors were part of a joint team sent by Universitas Gadjah Mada. The management team assisted in managing the health cluster coordination post and deployed a type-1 mobile emergency medical team (EMT type-1 mobile) to support the affected population. This was accomplished by partnering with village midwives to provide basic health services to IDPs.

Approximately 535 nEMTs were registered in HEOC to assist in Cianjur. The nEMT was directed to assist village midwives in the affected areas. Fifty-four village midwives were mapped in the Cianjur District Health cluster response map along with their contact numbers. A total of 162 midwives were mobilized to the field to strengthen three reproductive health tents set up in three primary health centers.

The best practice from this response operation was the activation of reproductive health, which was immediately activated on day one, and the appointment of nine components of MISP on the day after. This was also the first major disaster where the reproductive health subcluster officially used the Minimum Initial Service Package (MISP) approach in their report. This experience inspired more NGOs and sub-national health offices to develop reproductive health contingency and preparedness plans using nine components of the MISP approach, and national regulations were adopted to accommodate this effort.

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"To Work with People, Build on What They Have, Increase Their Capacity to Help Themselves…": A Qualitative Study of Community Perceptions of Humanitarian Project Closure in the Philippines and Development of a Guidance Document

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Introduction: In planning and implementing humanitarian responses to crises, a crucial set of questions revolves around issues of when and how to close projects. Discussion has primarily focused on exit strategies of organizations. Less attention has been directed to how project closure is experienced and perceived by people living in crisis-affected communities. This study aimed to better understand these perspectives and to develop resources to raise awareness and support dialogue around humanitarian project closure.

Methods: An interpretive description qualitative study was carried out in six communities in the Philippines that had experienced typhoons, displacement due to volcanic eruption, or armed conflict. Focus groups and key informant interviews were conducted with community members and local stakeholders. There were

9-31 participants in each setting, totaling 101 participants. Inductive and constant comparative approaches were used to compare within and across settings and identify practices and approaches associated with project closure that were valued by participants. Working closely with an Advisory Board drawn from local civil society organizations, a guidance document and workshop material were co-developed and tested in the six communities.

Results: Elements of project closure that were particularly valued by participants included transparency, collaboration, participation, sustainability, monitoring post-closure, fairness, and preparedness. These findings were used to structure the guidance document and develop workshop materials to increase awareness of considerations related to how humanitarian projects are closed, both for humanitarian organizations and members of communities affected by humanitarian crises.

Conclusion: How humanitarian projects are closed is highly consequential and can be a source of harm or can promote positive impacts that endure after a project has ended. Drawing attention to community perceptions of what is at stake related to project closure can create opportunities for dialogue and generate insights to improve humanitarian closure practices and policy, including empowering communities.

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Role of Pediatric Pharmacists in Disasters

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Summary: During disaster response scenarios, pediatric pharmacists' role becomes increasingly critical, as they bring specialized knowledge and skills essential for the care of children. Given the unique physiological differences between children and adults, accurate medication dosing, appropriate treatment modalities, and adherence to up-to-date evidence-based practices are paramount in pediatric care during emergencies. This presentation will elucidate the vital functions performed by pediatric-trained emergency pharmacists, particularly in high-stress environments where rapid decision-making is crucial.

Key topics will include the pharmacists' responsibilities in ensuring the safe and effective use of medications tailored to pediatric patients, especially in the face of drug shortages and supply chain disruptions. The presentation will also cover the pharmacist's role in assessing alternative treatment options, providing education to healthcare teams, and consulting on the appropriateness of various therapeutic strategies to ensure optimal outcomes for children affected by disasters.

Pediatric pharmacists highlight the importance of interdisciplinary collaboration among health care professionals, including physicians, nurses, and emergency responders. They serve as essential resources in developing and implementing pediatric-specific protocols and guidelines during crises.

This presentation aims to reinforce the necessity of incorporating pediatric pharmacists into disaster response planning and operations, ultimately enhancing the quality of care provided to vulnerable pediatric populations during emergencies. It showcases real-world examples and case studies and will highlight the need to advocate for the recognition of pediatric pharmacists as integral members of disaster response teams, ensuring that the unique needs of children are met with expertise and precision amidst challenging circumstances.

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Lessons Learned for ALS/MND Patients after the 2023 Türkiye Earthquake

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Summary: On 6 February 2023, a 7.8-magnitude earthquake struck the southern region of Türkiye, the most powerful earthquake recorded in the country since 1939. A second earthquake with a magnitude of 7.6 occurred nine hours later, its epicenter approximately 70 km from the first earthquake. On the same day, with the earthquakes having caused widespread destruction of houses and infrastructure in urban centers and rural areas across the country, the Government of Türkiye issued a level four alarm calling for international assistance. As of 5 April 2023, AFAD reported that the death toll has reached 50,3391 and 107,204 People injured. Some three million people have relocated, and more than half a million buildings have sustained damage, of which at least 298,000 buildings have either collapsed or have been severely damaged.

The ALS/MND Association of Turkiye headquarters in Izmir attempted to contact its 98 registered patients in the earthquake zone, where an estimated 550 patients were in need. The Association Chair, who is also an ALS Patient, with support from other volunteers and official institutions, evaluated the first 72-hour needs for the ALS/MND patients to keep them alive.

- Reached patients (first 24 hours): 30
- Reaching out to the Association Call Center: 15
- Number of mobile phones that could not be reached in the earthquake zone: 300,000 adults. Number of visited patients: 30 patients at the location by visit; 15 patients by volunteers, on the fifth day after the event.
- Most needed materials: Generator, O2 concentrator, rechargeable aspirator, air mattresses, medical consumables, diapers, water, fuel, batteries, hygiene products.

In disasters, the survival and rescue of individuals belonging to vulnerable groups is difficult, and the results are limited. Therefore, it is important to make comprehensive plans and keep regular records before a disaster occurs.

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DNAR Protocols and the Educational Activities of ACP Promoted Prehospital Care Respecting Patients' Presumed Intention

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Introduction: Conventionally, DNAR (Do Not Attempt Resuscitation) was not permitted in prehospital care by Japanese EMTs. In recent years, the Ministry of Health, Labor and Welfare has been promoting awareness of the Advanced Care Planning (ACP) policy. Accordingly, fire departments, medical associations, care manager liaison conferences, nursing facilities, etc., have been conducting awareness-raising activities on ACP and DNAR, targeting a range of professions, including the general public. In Kobe City, approximately 70 cases/year were deemed suitable for DNAR.
Methods: In the Kobe Medical Control (MC) council, a preparatory working group (PWG) for DNAR protocol was established in 2021 with the participation of representatives of care managers, nursing facilities, and women's associations, as well as medical and legal experts. The PWG decided that 1) presence or absence of ACP should be actively inquired by EMTs at the scene, 2) the patient's presumed intention is deemed to be applicable when it is confirmed by a family doctor without an official form as Physician Orders for Life-Sustaining Treatment (POLST), and 3) MC physicians are responsible for whole prehospital activities. The new protocol was launched in April 2023. Together, the Kobe City Medical Association has created a patient consent form for ACP instead of POLST and has actively held multiple educational sessions for citizens and health care professionals.
Results: In the first year since the program began, there were 78 cases of DNAR application, and 41 cases of CPR being discontinued. Of these, 18 cases were transported to the hospital, 15 cases were handed over to the family, and 8 cases were referred to the family doctor.
Conclusion: The introduction of DNAR protocols and the educational activities of ACP across multiple professions have halved the number of patients who received unnecessary CPR against their presumed intention.

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Toward Development of a Regional Index of Social Resilience to Disasters: Spatial Analysis of the Association between Neighborhood Socioeconomic Factors and Life Expectancy in Japan

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Introduction: Neighborhood socioeconomic status is a key determinant of geographical disparities in life expectancy within countries. These disparities can influence a community's disaster resilience and are critical factors to consider in disaster management. However, previous studies on this topic have not adequately accounted for spatial spillover effects, where the conditions in one region may impact neighboring areas. This study aimed to examine the association between neighborhood socioeconomic factors and life expectancy in Japanese municipalities, explicitly considering spatial spillover effects. Findings from this study could inform the development of regional indicators of disaster resilience from a socioeconomic perspective.
Methods: This cross-sectional ecological study analyzed 1,732 Japanese municipalities, with life expectancy as the outcome variable and ten socioeconomic factors plus two control variables as explanatory variables. Moran's I was first calculated for the residuals of the linear regression model to examine the presence of spatial dependency. The Spatial Durbin Error Model was then applied to identify both direct effects within a municipality and spillover effects from adjacent areas.
Results: Moran's I for the linear regression model was statistically significant, indicating the presence of spatial dependency. Unemployment and education levels showed spillover effects in the same direction as their direct effects, suggesting that improved conditions in one area are associated with increased life expectancy in neighboring areas as well. Conversely, taxable income showed a negative spillover effect for females, suggesting that improvements in income level in neighboring areas might contribute to adverse social or psychological impacts.
Conclusion: The study demonstrated the need to consider spatial spillover effects of socioeconomic factors from neighboring regions on health, in addition to direct effects from the region of interest. These findings offer insights for disaster management policymakers and practitioners in developing regional indicators and targeted interventions to strengthen disaster resilience and mitigate vulnerabilities across interconnected areas.

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Primary Care in Crisis: The Missing Link in Disaster Medicine - Experience from the 2024 Noto Peninsula Earthquake and Floods

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Summary: While Japan's current disaster medical support system effectively addresses acute medical needs, sustainable

primary care support requires enhancement. Following the Noto Peninsula Earthquake on January 1, 2024, the Japan Primary Care Association (JPCA) initiated specialized primary care support in Wajima City through December 2024. This report describes comprehensive primary care support activities in a region with over 50% of the elderly population that experienced flooding six months post-earthquake.

Support was provided to an outreach-based primary care clinic where a local physician, an Ishikawa Medical Association's Northern Noto Branch member, served as one of Wajima City's medical coordinators. The clinic provides home medical care, nursing, and rehabilitation services, and operates an NGO offering a "third place" support program for adolescents.

Between February 5 and July 1, 2024, eighteen physicians were dispatched. The team handled 1,487 outpatient visits and 725 home visits with local primary care physicians. This support enabled the local physician to attend 86 regional healthcare meetings, including the Wajima City Health and Medical Welfare Coordination Headquarters meetings. Additionally, 29 community activities were supported, including health promotion cafes and programs for high-risk pregnant women. Following severe flood damage in September, which caused one-meter flooding and the loss of outpatient functions, physician dispatch resumed. To enhance sustainability, visiting physicians covered weekend home visits, allowing local staff essential rest periods.

The JPCA aimed to develop support focusing on local healthcare sustainability and human resources. Supporting this crucial medical institution, which functions as the local medical association's disaster coordinator, contributes to maintaining the regional healthcare system's mid- to long-term sustainability.

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Exposure to Severe Weather Caused by Hurricane Harvey and Mortality among Populations of Vulnerable Older Adults

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Introduction: In 2017, unprecedented rainfall from Hurricane Harvey resulted in severe flooding in parts of Texas. While the association between the immediate effects of severe weather on mortality is well established, less is known about long-term mortality and how risk may differ across vulnerable populations, especially those reliant on health services. This study examines the association between severe weather exposure from Hurricane Harvey and mortality among vulnerable populations of older adults.

Methods: This retrospective cohort study used Medicare administrative claims data from beneficiaries aged 65+ who resided in Texas or Louisiana the year before and after Hurricane Harvey. Historic weather data was used to construct a 4-day measure of ZIP code tabulation area cumulative rainfall and identify locales exposed to high rainfall (above 75mm). Vulnerable older adult populations were identified. Attributable risk and relative risks (RRs) were estimated to quantify the impact of high rain exposure on mortality. Time-to-event analyses estimated associations between exposure to high rain and 12-month mortality.

Results: The study included 1,730,693 beneficiaries; 535,794 (37.5%) were exposed to high rain in Texas, and 264,265 (87.5%) in Louisiana. Beneficiaries with Alzheimer's disease and related dementias (ADRD) exposed to high rain had a 5% higher risk of mortality in fully adjusted models (HR=1.05, 95% CI: 1.02, 1.07) and 1,192 attributable deaths. High rain resulting from Hurricane Harvey was associated with a 13% higher risk of mortality among beneficiaries with end-stage renal disease (ESRD) in fully adjusted models (HR=1.13, 95% CI: 1.04, 1.23) and 85 attributable deaths.

Conclusion: The risk of mortality from exposure to severe weather differs based on the type of vulnerability. Those with an ADRD or ESRD diagnosis, in particular, had elevated mortality rates. High rain exposure had a significantly larger mortality impact on those of lower socioeconomic status. Emergency planning should pay particular attention to these highly vulnerable groups.

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Impact of Armed Conflicts on Continuity and Coordination of Care: A Systematic Review

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Introduction: Continuity of care (COC) and care coordination (CAC) are essential for promotive, preventive, curative, and rehabilitative services within people-centered health systems. However, maintaining COC and CAC is particularly challenging during emergencies and disasters, such as armed conflicts. Armed conflicts result in casualties, population displacement, attacks against healthcare infrastructure and workers, and supply chain disruptions. This systematic review synthesizes evidence on mechanisms and consequences of the impact of armed conflicts on COC and CAC, to provide evidence for future interventions and policies to strengthen healthcare delivery in conflict settings.

Methods: This systematic review follows the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis and PRISMA guidelines. The search strategy targets two key concepts—armed conflicts and continuity/coordinated care—and the resulting strings were run on PubMed MEDLINE, Scopus,

and Web of Science. In addition to peer-reviewed sources, grey literature was manually retrieved from reports, policy documents, and digital resources of relevant international organizations responding to or researching conflict situations. Eligible studies had to: (i) be available in English, French, Italian, or Spanish; (ii) address armed conflicts' impact on COC and CAC; (iii) focus on conflict-affected populations regardless of demographics; and (iv) be published between 01.01.2010 and 31.07.2024.

Results: The ongoing data extraction process aims to capture the study details, while the specific COC/CAC aspects affected by armed conflicts are being deductively categorized using the World Health Organization's "Continuity of Care and Coordination of Care frameworks". Emerging themes will be identified inductively to refine relevant concepts. Data will be synthesized based on the extraction form and thematic analysis.

Conclusion: This systematic review aims to provide evidence-based recommendations on mitigating the destructive impact of armed conflicts on COC and CAC and supporting health service delivery during active wars and military confrontations.

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Lessons Learned from a Multi-Hospital Pediatric Disaster Full-Scale Surge Exercise

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Introduction: Children are frequently victims of disasters. However, gaps remain in pediatric disaster preparedness. The New York City Pediatric Disaster Coalition (NYCPDC) is funded by the NYC Department of Health and Mental Hygiene (DOHMH) to prepare NYC for mass casualty events that involve large numbers of children. On May 23, 2024, the NYC PDC conducted a pediatric disaster full-scale exercise testing surge, communications, and secondary transport. Participants included three NYC pediatric hospitals and the NYC Pediatric Intensivist Response Team (PIRT).

Methods: The full-scale exercise was prospectively designed with specific goals: to test and improve communications with staff and city agencies; to test and improve hospitals' pediatric surge capacity plans and response; to identify space, staffing, and equipment needs for pediatric disaster; and for hospitals to identify and triage patients requiring secondary transport to another facility.

In collaboration with the DOHMH, PDC designed a Master Scenario Events List (MSEL) along with other tools to measure strengths and weaknesses to be identified at each institution at a system level. PDC created an exercise evaluation guide to assess: Communications, Emergency Operation Plans, Surge, Patient Tracking, Patient Transfer, Supplies, and Staffing, utilizing a performance rating scale from 1-4 and qualitative reporting.

Results: This information was used to report lessons learned and challenges to the participants and DOHMH in an after-action report. An after-action report was written based on information from evaluation guides, site-specific and group hot-washes, and an after-action meeting.

Conclusion: This presentation will highlight the strengths, challenges, and lessons learned from the exercise. Conducting a multi-hospital pediatric disaster full-scale surge exercise produced lessons learned to address exercise gaps that can improve surge capabilities during future exercises and real-time events.

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Emergency Care Capacity Assessment in Conflict-Affected Southeastern Myanmar: A Pilot Study

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Introduction: Following the 2021 military coup in Myanmar, widespread conflict and displacement have severely strained healthcare systems along the Myanmar-Thailand border. This pilot study assessed emergency care capacity in the southern Shan and Karenni States, located in the southeastern region of Myanmar.

Methods: Interviews were conducted utilizing a modified WHO hospital unit emergency assessment tool across seven healthcare facilities. Cluster analysis methods were used on the data to identify naturally occurring groups across a set of variables provided to investigate healthcare infrastructure. Upon examination of the dendrogram and utilizing Ward's algorithm, the data from the four clinics were grouped, while the three secondary hospitals were evaluated individually. Descriptive statistics were examined to understand the similarities and differences between locations.

Results: Four clinics and three hospitals were evaluated, and 162 facility characteristics were obtained. All facilities were found to provide basic emergency care services and have at least one emergent bed available, while only one hospital has a 24-hour emergency care unit. Strengths across facilities studied include management of acute respiratory distress, intravenous fluid administration, and burn management. Critical gaps across facilities include an absence of a dedicated triage area and a lack of formalized protocols, quality improvement measures, and reliable access to water and electricity.

Conclusion: This pilot study reveals strengths and gaps in emergency healthcare infrastructure within the southern Shan and Karenni States. These findings underscore the need for targeted interventions to strengthen emergency care capacity in this conflict-affected region, focusing on infrastructure, protocol development, and resource availability.

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A Novel COVID-19-Like Symptom Monitoring and Patient Follow-Up System for the Rohingya Patients Under Home Quarantine in the Refugee Camps in Cox's Bazar, Bangladesh

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Introduction: The COVID-19 pandemic posed an immense threat to one million Rohingya from Myanmar living in the world's largest and most densely populated refugee camps in Cox's Bazar, Bangladesh. In response to the crisis and lack of COVID-19 testing as well as lack of awareness and widespread stigma against the disease, a global nonprofit, HAEFA, implemented "COVID-19-like Symptom Monitoring and Patient Follow-up System for the patients under home quarantine" in Kutupalong and Balukhali refugee camps in Cox's Bazar. The main objective of the monitoring by nine trained Rohingya volunteers by phone was to ensure prompt identification of severe symptoms (breathlessness and others) and hospitalization. We present here an evaluation of the prevalence of COVID-19-like symptoms, the development of severe disease requiring hospitalization, and mortality.
Methods: Deidentified patient data (n = 553) collected from HAEFA's Symptom Monitoring and Patient Follow-up System between September 1, 2020, to April 30, 2021, were analyzed for a comprehensive analysis of COVID-19-like disease within the camps.
Results: A total of 553 patients with COVID-19-like symptoms were registered at two HAEFA clinics. The mean age of the patients was 19.18 years, three patients were > 65 years old, and 53% (n = 293) of the patients were successfully followed up for 14 days. 95.85% of the followed-up patients stayed under home quarantine during the entire period. 91.2% experienced fever, and 23.7% had at least one risk factor for COVID-19. 12.18% of patients developed shortness of breath who were referred to nearby hospitals. In 21.72% of households, at least one family member developed similar symptoms. There were no reported mortalities.
Conclusion: The home-based, remote symptom monitoring system by trained community volunteers successfully followed up 53% of patients (n = 293) with COVID-19-like symptoms for 14 days. This method helped detect early severe symptoms among 12% of patients under home quarantine and arranged effective referral for hospital-based management without mortality.

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Predicting Mortality and Injury Rates in Healthcare Facility Attacks in Syria: A Bayesian Ridge Regression Approach

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Introduction: Attacks on hospitals and medical points in conflict zones significantly impact mortality and injury rates. This study applies a Bayesian Ridge Regression model to predict these rates, analyzing variables such as geographic location, type of operation, perpetrator, and demographics.
Methods: The dataset, collected by the White Helmets, comprised records of attacks, detailing injuries, fatalities, and contextual variables. Categorical variables (Governorate, Type of Operation, Perpetrator) were encoded, and temporal variables (Year, Month, Day) were extracted. The Bayesian Ridge Regression model was developed, trained, and tested to determine the influence of each factor on mortality and injury rates.
Results: For mortality prediction, the model identified the number of deceased men (β = 1.23), women (β = 0.57), and children (β = 0.40) as the most influential variables. Geographic locations, particularly Homs (β = 1.23), Idleb (β = 0.57), and Hama (β = 0.40) governorates, also had significant impacts. Temporal factors showed minimal influence, with coefficients for the year (β = 4.47e-09), month (β = 4.69e-09), and day (β = 2.50e-08). The model demonstrated high accuracy with an R-squared value of 1.0. For injury rate prediction, the number of injured men (β = 1.64e-10), women (β = -1.23e-10), and children (β = 1.18e-10) were influential. Homs (β = 1.23), Idleb (β = 0.57), and Hama (β = 0.40) also significantly impacted injury rates. Temporal factors had low coefficients, with year (β = 3.24e-10), month (β = 3.17e-10), and day (β = 1.15e-09). The model achieved an R-squared value of 0.98, indicating strong predictive capability for injury rates.
Conclusion: The Bayesian Ridge Regression model provides critical insights into factors affecting mortality and injury rates in attacks on healthcare facilities. These findings can inform clinical guidelines, emphasizing the protection of vulnerable populations, resource allocation in high-risk regions, and implementing targeted interventions based on these results.

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Building Health Resilience: IFMSA's Approach to Disaster Risk Management

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Introduction: Disasters impose significant challenges on global health systems, especially in vulnerable populations with limited resources and disaster preparedness training. The International Federation of Medical Students' Associations (IFMSA) Emergency, Disaster Risk, and Humanitarian Action (EDHA) program addresses these issues by equipping medical students and communities with essential disaster resilience and preparedness skills.
Methods: The EDHA program facilitated 46 targeted activities over three years, including 21 disaster-response training sessions for medical students and healthcare professionals. Nine humanitarian campaigns aided disaster-affected areas, while partnerships with local NGOs and health ministries supported advocacy and policy engagement. Data were collected

through reports on activities reached, training outcomes, and policy influence.

Results: The EDHA program reached over 82,000 individuals, comprising 57,000 community members who gained public health information and 25,000 medical students and professionals who enhanced their disaster preparedness skills. Training evaluations showed a 65% increase in knowledge retention and a 70% improvement in disaster response skills. Policy discussions in five countries led to local advancements in disaster preparedness. The humanitarian campaigns delivered critical aid, including medical supplies, to areas affected by crises, ensuring direct community benefit and strengthening local health resilience.

Conclusion: The IFMSA EDHA program builds disaster resilience in vulnerable populations through education, advocacy, and community aid. This program also empowers future healthcare leaders to create effective and responsive health systems in times of crisis.

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Outcome and Critical Care Resources Consumed by Do Not Resuscitate (DNR) Versus Non-DNR Cases Admitted to the ICU at a Tertiary Hospital in Saudi Arabia, a Retrospective Review From Critical Care Databases

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Introduction: The Do Not Resuscitate (DNR) order aims to prevent futile interventions when the medical prognosis is poor. This study evaluates resource utilization by DNR patients in the Intensive Care Unit (ICU) and compares it with non-DNR patients, addressing a gap in research within Saudi Arabia.

Methods: We conducted a retrospective analysis of 7,104 patients admitted to the ICU at King Abdullah Medical City, Makkah, from January 2016 to June 2023. Patients were categorized into DNR and non-DNR groups. Data were extracted from the critical care registry and analyzed descriptively. The chi-square test assessed resource utilization outcomes between the two groups post-DNR decision.

Results: Among the 7,104 patients analyzed, 988 were classified as DNR, while 6,116 were non-DNR. Notably, DNR patients had a mean age of 61.4 years, significantly older than the non-DNR group at 55.9 years ($p < 0.001$). The mortality rate for DNR patients was markedly higher at 85.1%, compared to just 10.2% for non-DNR patients ($p < 0.0001$). Furthermore, DNR patients utilized a substantial amount of critical care resources, with 88.9% requiring mechanical ventilation versus 41.4% in the non-DNR group ($p < 0.001$), and 28.6% receiving Continuous Renal Replacement Therapy (CRRT) compared to 6.7% ($p < 0.001$). The mean length of ICU stay was also significantly longer for DNR patients at 20.4 days, in contrast to 8.0 days for non-DNR patients ($p < 0.001$). Additionally, a higher percentage of DNR patients received two or more antibiotics (76.1%) compared to 56.8% of non-DNR patients ($p < 0.001$).

Conclusion: DNR patients consumed substantial healthcare resources post-DNR decision. Optimizing physician approaches toward DNR patients is essential to balance resource allocation and patient comfort in terminal cases.

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Remember Autistics Before and After Disasters

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Summary: Disasters are challenging and traumatic for autistic individuals. They may be sensitive to sensory stimuli, causing them to become overwhelmed because of chaos and noise. Communication difficulties can make it difficult for them to get help or connect with loved ones during disasters. The purpose of this study is to ensure that autistic individuals are recognized and considered in disaster preparedness efforts.

Challenges for Autistics:

Sensory difficulties may lead to panic attacks, sleep disorders, and other behavioral problems. Communication difficulties can make it difficult for them to get help or express their needs. Social difficulties can make it difficult for them to find support or connect with new people during a disaster. They may also experience anxiety in crowds.

Changes in routine cause significant stress and anxiety.

Safety risks. During disasters, autistic individuals may be at risk of getting lost or injured. They may also have difficulty taking the necessary steps to protect themselves.

In disasters, officials need to recognize autistic individuals and provide them with special support. Some common characteristics of autistic individuals:

Avoids eye contact.
Makes repetitive movements.
Has a limited range of languages
Difficulty understanding social rules.
Hypersensitivity or insensitivity to sensory stimuli.
Needs routines and stability.

Some behaviors shown by autistic individuals during disasters:

Confusion.
Anxiety.
Agitation.
Shutdown or self-isolation.
Risk of loss.
Difficulty protecting oneself.

Tips that can help identify autistic individuals:

Look for an identification bracelet or card.
Be patient and understanding.
Speak calmly and avoid eye contact.
Consider sensory needs: Use pictures or simple language instead of giving complex instructions.
Help establish routines.
Get expert support if necessary.

Recognizing autistic individuals during disasters and providing them with special needs is one of the most essential achievements for a resilient society.

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Policy Changes During Crisis: A Case Study of the National Milk Bank Guidelines

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Introduction: Emergencies can disrupt infant feeding patterns, compromising maternal-infant nutritional access. However, even in times of crisis, breast milk is the most secure source of nourishment for infants. In crises, milk banks may serve as alternative nutrition sources. This study examines policy modifications during a crisis.
Methods: This case study analyzes the policies of the Ministry of Health and National Milk Bank on breast milk donation in Israel. It compares both the recipient criteria and donor criteria before and after October 7, 2023, when the war began.
Results: On October 9, 2023, the Ministry of Health published an emergency "Guidelines for breast milk donations" expanding eligibility for receiving breast milk. In addition to the routine eligibility of premature infants (< 32 weeks gestation and/or < 1.5 kg), breast milk will also be available to:

1. Infants ≤6 months: maternal absence due to crisis (injury, abduction, or death)
2. Infants ≤6 months: maternal military recruitment
3. Infants 6-12 months: maternal absence/recruitment, formula intolerance (due to allergy or other)
4. War-injured infants ≤12 months: recovery requirement
5. Any medical condition requiring breast milk, such as an oncological condition, based on a document from a medical expert.

Regarding the ability to donate breast milk, the only change found was the removal of the criterion for using breast pumps from certain models.
Conclusion: The Israeli Ministry of Health and the National Milk Bank implemented significant policy revisions during the war's initial phase, primarily updating and expanding the criteria for receiving breast milk to include maternal conditions and address unique wartime circumstances, while donor eligibility criteria remained largely unaltered. In light of ongoing crises and the controlled availability of breast milk, a re-evaluation of milk donation policies is necessary. Easing donor criteria could potentially extend optimal nutrition access to more infants.

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Novel Tools to Monitor the Effect of a Major Conflict on Mental Health – the Case of the Israeli Public's Response to the October 7th War

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Introduction: The terror attacks on October 7th, 2023, and the war that followed, have had a profound impact on the mental health of the Israeli population. The presentation will provide a comprehensive analysis of mental health outcomes following the war, incorporating data from multiple data sources.
Methods: The research focuses on the prevalence and correlates of post-traumatic stress disorder (PTSD), emotional distress, and substance use, utilizing a combination of traditional epidemiological methods, including medical records analysis and surveys with innovative data collection techniques. PTSD, anxiety, and depression, as well as quality of life, were measured in different populations and correlated with other data sources, including Google Trends™ of Spotify™ music application data regarding Israel.
Results: 31.4% of participants screened positive for PTSD approximately one month after the attacks, and significant increases in the use of tobacco, alcohol, tranquilizers, and sleep medications were reported. Younger age, female gender, and higher levels of exposure to the attacks were associated with increased PTSD and emotional distress. Google Trends identified an increase in searches related to depression, anxiety, and PTSD, and Spotify music preferences in Israel detected a decrease in songs' valence, as defined by Spotify's algorithm.
Conclusion: This study highlights the critical need for targeted mental health interventions and support mechanisms to address the widespread psychological impact of the October 7th war and to monitor its effects in various populations. These findings provide valuable insights for mental health professionals and policymakers in Israel and globally.

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Ethical Allocation of Scarce Medical Resources and Crisis Standards: Exercising Disaster Ethics

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Summary: More than four years after the start of the COVID-19 pandemic, many states in the United States have not approved a framework for the ethical allocation of scarce medical resources and/or the invocation of Crisis Standards of Care (CSC) in their state emergency operations plans.

This report discusses a pragmatic approach to socialization of and education about such a guidance document, through structured tabletop exercises for leaders of regional Healthcare Coalitions (HCCs) in the State of Michigan. In Michigan, the State Disaster Medical Advisory Committee revised previous state guidance on the ethical allocation of scarce medical resources during the pandemic. Revisions included a more nuanced use of scoring systems predictive of mortality (some of which have been deemed potentially disadvantageous to certain racial groups), consideration of the perspectives of the disability community, and a greater emphasis on the ethical duty to plan so that CSCs need not be invoked.

Detailed presentations to Regional HCCs were conducted throughout the state, immediately followed by a structured

tabletop exercise (TTX) that allowed HCC members to work through a scenario (a critical blood product shortage) using ethical guidance alongside practical aspects of emergency management and health system operations. Identical conferences occurred for both urban and rural HCCs.
This state-endorsed ethical and legal framework was presented by the legal expert (co-author LG), followed by practical applications by a hospital executive preparedness expert (co-author ML). HCC's emergency management and medical leaders practiced how the critical shortage would impact their region using the framework's principles within the construct of their emergency operation plans. This method of amplifying state guidance with concomitant TTX could provide a superior educational tool for those tasked with responding to critical scarcity events.

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EMDR Therapy Before PTSD: The Benefit of Treating Acute Stress Disorder from a Recent Event

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Summary: This article is clinical research based on our practice. This study examined the possibility of early treatment of patients who have experienced trauma with EMDR therapy. EMDR (Eyes Movement Desensitization and Reprocessing) therapy is a neuro-emotional integration therapy using eye movements to treat trauma. The objective of this study is to see if early specialized treatment can prevent the onset of Post Traumatic Stress Disorder (PTSD). All patients (N = 31) were treated a few days to a few weeks after experiencing a traumatic event. They were evaluated before and after therapy with a PCL-5. The results show that 96.8% of patients did not develop PTSD, and that for 77.4% of patients, 5 sessions or fewer were sufficient, with an average of 4.29 sessions and a standard deviation of 2.08. EMDR therapy is recommended for the management of PTSD, but nothing has yet been specified for the management of Acute Stress Disorder (ASD). The elements of this study allow us to suggest that EMDR therapy would be effective for treating patients early and preventing the onset of PTSD.

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WhatsApp as a Crisis Communication Tool for the Deaf and Hard of Hearing: The Israel-Hamas War from October 7, 2023

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Introduction: Social media platforms have become crucial tools for crisis communication, especially among deaf and hard-of-hearing populations. Given the global prevalence of hearing loss (over 430 million affected), effective communication strategies for this population during emergencies are vital.
Methods: This study examined four WhatsApp groups catering to the deaf and hard-of-hearing community during the 2023 Israel-Hamas war. These groups served distinct purposes: government updates, emotional support, news updates, and mutual assistance. Data science tools, including Natural Language Processing (NLP) models and sentiment analysis, were employed to analyze message frequency, content, and emotional tone.
Results: Emergency and disaster events significantly increased daily message frequency, peaking in the early evening, especially following large-scale rocket attacks. Word frequency analysis revealed recurring themes of "hearing," "welfare," "problem," "transcription," "payment," and "accessibility." Sentiment analysis predominantly showed negative emotions, reflecting the community's distress and helplessness. Government updates group saw the highest activity, particularly in the initial days, indicating a strong need for official information. However, frequent updates also led some members to leave the group due to fear. The emotional support and news update groups highlighted significant challenges in accessing information, with discussions focusing on the lack of sign language interpreters for news broadcasts and the need for better transcription services. Financial concerns regarding the cost of accessibility services were prominent. The mutual assistance group facilitated the exchange of experiences, coping strategies, and technological solutions like vibrating alarms in alerting apps. However, discussions revealed ongoing issues with real-time alert systems.
Conclusion: Social media has the potential to bridge communication gaps for this population during crises while highlighting persistent accessibility challenges. Our findings highlight a critical need for improved services, including accessible information dissemination and targeted alert systems, these insights can inform more effective crisis communication strategies, enhancing emergency preparedness for the deaf and hard-of-hearing community.

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Updated Guidelines for Pediatric Tactical Emergency Casualty Care

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Introduction: In 2023, the Committee for Tactical Emergency Casualty Care (C-TECC) issued updated guidelines for the care of pediatric patients who are victims of a high-threat incident such as an active shooter event. C-TECC is a not-for profit coalition that brings together subject matter experts from

EMS, fire, law enforcement, government, and emergency medicine to translate military trauma lessons learned into the civilian high-threat prehospital community. The revised pediatric guidelines provide evidence-based or best practice considerations to those individuals and departments that provide operational medical support and that may care for children in this uniquely dangerous and under-resourced prehospital environment.

Methods: The evidence base for the care of children in this environment is lacking, and the medical care delivered in the high-threat environment is inconsistent and often not optimized for the care of infants and children. The guidelines are supported from the existing literature base where possible, and where it is not, by consensus as to the current best practices as determined by iterative deliberations among the C-TECC organization.

Results: The guidelines provide patient assessment and management considerations specific to the care of children in three dynamic phases of the high-threat environment: Direct Threat, Indirect Threat, and Evacuation. The guidelines can inform both planning and operations in order to optimize the care of children in this high-risk environment.

Conclusion: The high-threat environment is dynamic and there are competing safety, tactical/operational, and patient care priorities for responders when infants and children are injured. The guidelines provide recommendations on the type of medical and psychological care that should be considered under each phase of threat and establishes the context for them in order the maximize the opportunity for a good outcome for an injured pediatric patient.

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Older Persons Disaster Resilience in Latin America and the Caribbean

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Introduction: Natural disasters pose significant challenges for vulnerable populations worldwide, particularly older persons residing in Latin America and the Caribbean. This region faces disproportionate exposure to natural hazards, including floods, hurricanes, and earthquakes, with older adults representing a rapidly growing segment of the population. Older adults present unique vulnerabilities due to physiological aging, chronic medical conditions, increased mobility, and socio-economic constraints. These factors place them at increased risk of adverse outcomes during and after disasters. Despite recommendations from international organizations, gaps remain in research and policy planning to safeguard this vulnerable demographic.

Methods: A scoping review was conducted to synthesize the available literature on the resilience of older persons following natural disasters in Latin America and the Caribbean. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA- ScR) guidelines were followed. Comprehensive searches were conducted in major databases, including MEDLINE, Embase, Scopus, Web of Science, and CINAHL. After deduplication and screening, 11 articles were included for data abstraction. Thematic analysis was performed using Whittemore and Knafl's integrative framework.

Results: Older persons were found to face compounded vulnerabilities during disasters, with critical disruptions in healthcare access, utility services, and social support networks. Psychological impacts such as depression, anxiety, and PTSD were common, particularly in those with prior dependence or social isolation. Despite these challenges, some older persons showcased high levels of resilience. However, advanced age was generally associated with decreased resilience, especially in economically disadvantaged populations. Policy analysis revealed that while some guidelines exist, consistent national-level implementation in Latin America and the Caribbean remains insufficient.

Conclusion: This review highlights the urgent need for evidence-based disaster preparedness and recovery strategies tailored to older adults in Latin America and the Caribbean. Multi-sectoral collaboration among governments, health agencies, and local communities is essential to completing this process. Strengthening social support systems, integrating older persons' voices into planning, and prioritizing targeted research can contribute to more resilient, inclusive disaster management in the region.

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Building Evidence in Public Health Emergency Preparedness ("BePHEP" Project) - A Systematic Review

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Introduction: Humanitarian crises, often characterized by mass displacement, armed conflicts, and natural disasters, may increase the risk of infectious disease outbreaks, particularly in low- and middle-income countries (LMICs). These crises exacerbate the vulnerability of already fragile healthcare systems, limiting access to essential resources and further compromising public health. This systematic review aims to evaluate the strategies and

interventions implemented in LMICs to prevent and manage infectious diseases during humanitarian crises from 2018 to 2023.
Methods: A comprehensive literature search was conducted across databases, including Scopus, PubMed, and Web of Science, following the SPIDER framework to identify relevant studies. The review included studies published between 2018 and 2023 that focused on the prevention and management of infectious diseases in LMICs during humanitarian crises. The quality of the studies was assessed via the Joanna Briggs Institute checklist.
Results: Eleven results were identified from 1,415 unique articles, addressing different interventions for infectious disease control, including vaccination campaigns, epidemiologic surveillance, and integrated health services.
Gang violence in Haiti and Cyclone Kenneth in Mozambique have fueled cholera outbreaks, tackled through surveillance, case management, improved WaSH services, and vaccination. In Thailand, mathematical models optimized cholera vaccination in refugee camps. At Kumbh Mela in India, targeted surveillance prevented disease spread. The Philippines improved disaster response with point-of-care testing. Yemen's malaria surveillance integration was recommended. Uganda's multihazard plan supported the Ebola and refugee crises. In South Sudan, integrated immunization increased coverage. Despite conflicts, Nigeria's measles efforts faced challenges, but SARS-CoV-2 vaccination improved through visual communication.
Conclusion: These interventions highlight the importance of diverse, targeted, and collaborative responses to address complex health crises without relying on unsustainable investments. They emphasize safeguarding the right to health, even in the face of challenging sociopolitical conditions, crises, or natural disasters.

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Migrant Women's Emergency Department Utilization Amid the COVID-19 Pandemic: Investigating Barriers to Primary Healthcare Using Data From a Hospital in Milan, Italy

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Introduction: During the COVID-19 pandemic, migrants and women were among the most vulnerable groups. By adopting an intersectional lens that considers the challenges arising both from being a migrant and a woman, it is possible to emphasize how migrant women (MW) face specific impacts. While emergency department (ED) datasets are typically used in disaster contexts to analyze utilization patterns and monitor conditions post-emergency, this study employed ED data to assess whether the pandemic exacerbated MW's barriers to accessing primary healthcare (PHC).
Methods: A retrospective observational analysis was conducted using data from the Sacco Hospital ED in Milan, Italy. Ambulatory-care sensitive conditions (ACSC) served as indicators to assess PHC effectiveness. Access-related variables were analyzed using appropriate tests to identify patterns in ED utilization, while time trends revealed visits distribution over time.
Results: ED utilization decreased for all groups, but while Italian patients did not return to pre-pandemic utilization levels, both migrant women and men exceeded their previous visit rates. Although ACSC-related visits declined across all groups, the decrease among MW was not statistically significant, suggesting a more stable reliance on the ED. After the pandemic, ACSC visits among MW slightly increased, indicating a potential decline in their health status, possibly due to postponed PHC during the pandemic. The study also found that MW, like migrant men, are referred to GPs more often than Italians and are triaged with lower urgency codes.
Conclusion: While differences between migrants and Italians are evident, they primarily reflect trends within the broader migrant population rather than specific patterns among MW, particularly concerning ED utilization, urgency of presentation, and assessment outcomes. EDs must collect more detailed information to facilitate a nuanced and intersectional analysis.
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A Home Disaster Preparedness Intervention with Korean-American Immigrants in New York City

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Introduction: On a stormy September evening in 2021, the remnants of Hurricane Ida arrived in New York City, resulting in record rainfall, widespread flooding, and 13 deaths. Eleven of those deaths occurred in basement-level homes of residents of Asian descent in low-income Asian immigrant communities. As a result of this experience, members of an Asian immigrant community organization requested disaster preparedness education for their members.
Methods: The Household Emergency Preparedness Instrument (HEPI) was translated into Korean, field-tested, and pilot tested. The K-HEPI was then used in a controlled before-and-after study to measure the preparedness level of an at-risk population before and after receiving a group-based educational intervention. The experimental group received two classes covering evacuation planning, community resources, and disaster kits. The experimental group's K-HEPI scores were compared to the control group's scores at baseline and at one-month follow-up.
Results: The K-HEPI generated the intended factor structure, providing evidence for construct validity of the translated instrument. Participants in the experimental arm (n = 200) realized greater pre-post gains in disaster preparedness compared to those in the control arm (n = 199) (Preparedness Actions and

Planning Subscale β=1.29, SE=0.103, p < 0.001; Disaster Supplies & Resources Subscale β=1.07, SE=0.110, p < 0.001).
Conclusion: The community organization continues to offer the disaster preparedness intervention to its members, demonstrating the program's sustainability. The K-HEPI should be used to assess disaster preparedness among Korean-speaking populations and to evaluate the effectiveness of preparedness interventions. Further testing of the K-HEPI and the intervention in longitudinal studies is recommended to explore potential associations between disaster preparedness and outcomes such as survival without rescue, prevention of injury, or acute exacerbations of chronic illnesses. Replicating the intervention across different immigrant populations is essential, and data from these studies can inform policy development to better address the needs of immigrant communities before, during, and after disasters.

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A Pediatric Coalition Response to the Respiratory Illness Outbreak

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Introduction: Children are frequently victims of disasters. However, gaps remain in pediatric disaster preparedness. The New York City Pediatric Disaster Coalition (NYCPDC) is funded by the NYC Department of Health and Mental Hygiene (DOHMH) to prepare NYC for mass casualty events involving children. In the fall of 2022, there was a significant increase in pediatric emergency department visits and hospitalizations due to Rhinovirus, Enterovirus, COVID-19, Influenza, and RSV throughout many areas of the United States. This, coupled with underlying staffing and other shortages, created a strain on the healthcare system. In many facilities, surge capacity was exceeded, Emergency Departments and Pediatric Intensive Care Units were closed to new patients, and inter-hospital transports were denied.
Methods: In response, the NYCPDC rapidly (over four days) developed a one-hour webinar focused on: epidemiological data sharing, impacts on patient care, a review of prevention, treatment, and supply issues, and a discussion on current and future strategies to respond to the outbreak. The one-hour webinar included a total of four presenters with representation from the NYCPDC, DOHMH, as well as two major NYC children's hospitals and a national audience.
Results: Over 400 healthcare workers registered for the webinar from around the United States. Prior to the conclusion of the webinar, participants had the opportunity to ask questions and contribute to the session by sharing their firsthand surge experiences, including capacity expansion, challenges, and best practices. Following the session, a recording of the webinar as well as a curated listing of resources developed in cooperation with the National Pediatric Disaster Coalition were distributed to every participant.
Conclusion: This presentation will provide a summary of the webinar and highlight effective strategies to respond to future outbreaks. This includes managing a large influx of pediatric patients in the emergency department and pediatric intensive care unit, as well as effective transfer strategies.

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Armed Conflicts and Health Impact - Is there an Overall Correlation Between Conflict Intensity and Health Outcomes in Contemporary Conflicts while Accounting for Vulnerability and Functioning of Healthcare Services?

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Introduction: Armed conflict can be described as human development in reverse. Outside of the direct consequences of violence, there are numerous ways that an armed conflict may have indirect effects on people's health and well being. Studies give varying results, and the health impact seems to differ from context to context. We aimed to determine how conflict intensity is associated with health outcomes, accounting for existing vulnerabilities and functioning of healthcare services in countries going through armed conflict.
Methods: The study is based on panel data on conflict intensity, vulnerability, functioning of healthcare services, and health outcomes in 42 conflict-affected countries between 2000 and 2019, using fixed-effects panel regression analysis to determine the association between conflict intensity and health outcomes.
Results: Conflict intensity was positively associated with the health outcomes included in this study. As the conflict intensity increased, the mortality and prevalence due to these outcomes also increased, albeit this was not statistically significant for half the outcomes (8/16). After adjusting for vulnerabilities and functioning of healthcare services, this positive association became significant for all the health outcomes. Vulnerabilities and functioning of healthcare services were stronger predictors of the outcomes. Sub-group analysis showed that conflict intensity was more significantly associated with outcomes in countries with high- and medium vulnerability scores.
Conclusion: Existing vulnerabilities and the condition of healthcare systems are known to impact health outcomes. The association between conflict intensity and health outcomes strengthens when existing vulnerabilities and the state of healthcare services are considered. This underscores the importance of incorporating strategies to address socioeconomic inequities and strengthen healthcare system capacity in interventions for conflict-affected regions. It also raises additional concerns for the long-term negative health effects related to the increasing trend of attacks on health care in contemporary conflicts.

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Managing Information on Pregnant Women to Protect Local Pregnant Women and Babies; From the Kumamoto Earthquake to the Noto Peninsula Earthquake

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Summary: HuMA supported the obstetrics and gynecology departments of hospitals affected by the Noto Peninsula earthquake by dispatching experts. Keiju General Hospital continued to provide medical care in the temporary ward after the damage to its obstetrics and gynecology ward made it difficult to provide medical care. Pregnant women who could not live safely after the disaster were urged to evacuate to the hospital, and they accepted pregnant women; for example, a pregnant woman with gestational diabetes who survived the tsunami and the collapse of her house, and a pregnant woman who was close to giving birth. The hospital had been collecting information on pregnant women visiting the hospital since before the disaster, and promptly sent messages after the disaster to check their health status, evacuation locations, and whether they had any problems or symptoms. For those who wanted to transfer to another hospital due to evacuation, they wrote referral letters and contacted the transfer destination. Those who were worried about not being able to visit the hospital were consulted by phone. During the Kumamoto earthquake, at the request of the Aso City public health nurse, HuMA and ALSO collected information from local pregnant women and responded according to the risks. Utilizing this experience, the hospital had been communicating with them by phone and social media since before the disaster, and information was collected immediately after the disaster. However, information on pregnant women was insufficient, because they were not able to collect the pregnant women who never visit the hospital. If the information on local pregnant women could be managed by the government during peacetime, it could lead to smoother responses to pregnant women in disasters and save more pregnant women and fetuses.

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Serious Pediatric Cases Evacuated by Air Medical Evacuation Squadron, Koku-Jieitai (Japan Air Self-Defense Force): Significance of "Disaster Relief"

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Introduction: Limited facilities provide curative treatment for serious pediatric diseases, often necessitating long-distance transport. However, such transport poses challenges due to the need for extensive medical equipment. In emergencies where no alternatives are available, the Self-Defense Forces may be requested to provide evacuation within the framework of "disaster relief" Protocols. The Air Medical Evacuation Squadron (AMES) specializes in transporting critically ill patients using a fixed-wing aircraft. This study reviews the pediatric cases managed by AMES and analyzes patient characteristics.

Methods: Pediatric evacuation cases (n = 34) from 2006 to 2023 were reviewed. It was examined the age, main disease, purpose of transportation, evacuation distance, and use of mechanical ventilators or extracorporeal membrane oxygenation (ECMO) were examined, referring to the medical records held by AMES.

Results: The average age was 5.7 ± 5.8 (0–16) years, and 17 (50%) were 1> year old. In addition, 10 (58.8%) children aged 1> year old were under seven months of age, and one case was under one month of age. The most common diseases were cardiovascular disease (CVD) in 18 patients and respiratory disease (RD) in 14. The purpose of transport was 16 cases of CVD to install a ventricular assist device, 3 cases of RD to undergo lung transplantation, and one case of CVD to undergo heart transplantation. The evacuation distance was 453.7 ± 218.6 miles, of which eight cases were over 600 miles. Twenty-nine patients (85.3%) were fitted with a ventilator, of which eight patients received ECMO (CVD, 6; RD, 2). In all cases, physicians from the transport hospital were on board. No cases of cardiac arrest occurred during evacuation.

Conclusion: The AMES functions adequately as "disaster relief" for the social mission of transporting critically ill pediatric patients.

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Bridging Gaps in Access to Healthcare Information for Minority Ethnic Groups in Glasgow

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Introduction: The Royal Hospital for Children in Glasgow (RHCG) is the largest pediatric emergency department (ED) in Scotland, with over 76,000 attendances in 2022. Glasgow has a growing population of minority ethnic groups, with a 75% increase in the 2022 census from 2011. Research suggests widening health inequalities, with children from different socioeconomic and ethnic backgrounds more likely to present to the ED. They may experience language barriers and are often unaware of alternative services within the National Health Service (NHS), such as NHS 24 and free prescriptions from pharmacies. The aim is to address these knowledge gaps.

Methods: The demographics and presentation mode of out-of-hours "standard" and "non-urgent" cases based on the Manchester Triage System were analyzed in two weeks in winter 2022. A partnership was formed with a charity catering to refugee and asylum-seeking women and girls aged 12 years and over who experience isolation and digital exclusion. Workshops were facilitated at the charity with language assistants, with talks from healthcare professionals covering ED, General Practice, Maternity services,

Immunizations, and Mental Health. Awareness was also raised on the right to interpreter services.
Results: Families from a minority ethnic background made up 30% of attendances and only 13% of those called NHS 24 for advice, with the rest self-referring to the ED. In response, multilingual leaflets and posters were created to direct families to RHCG's website, signposts to services available for common presentations in 242 languages. Written feedback from workshop attendees highlighted the need for this initiative, with many reflecting on the amount of information learnt, particularly on antenatal care, health visiting, and mental health. Several women also decided to vaccinate their children.
Conclusion: Further work needs to be done to bridge the gap in access to health information, and this can be done in partnership with charities.

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Resilience and Care: Women's Health Amidst War

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Summary: Emergency nursing in Gaza's war zone presents innumerable challenges when caring for female patients in a depleted health care system. Negative health outcomes specifically impact women of all ages due to a lack of access to menstrual care products, prenatal and primary care, private bathrooms, medication, essential nutrition, and clean water. The massive destruction of infrastructure and consequent internal displacement of millions have led to a rise in infectious diseases. The few remaining functional hospitals depend heavily on foreign medical delegations for supplies, which results in a lack of standardized treatment for women's health complaints. Emergency departments must also navigate overcrowding, lack of basic supplies and specialists, and prioritization of daily mass casualty incidents from nearby explosions. These obstacles make treatment, discharge teaching, and follow-up care for women's health difficult to implement. Despite these arduous circumstances, Gazan health care professionals find innovative solutions to improve outcomes and reduce harm while honoring the cultural and religious preferences of their female patients.

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Development of an Early Warning System to Prevent Severe Maternal Outcomes in Humanitarian Settings

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Introduction: Obstetric Early Warning Systems (OEWS) improve maternal morbidity outcomes across various settings by enhancing emergency obstetric care and facilitating early intervention. However, there is limited research analyzing the effectiveness and implementation of OEWS in low-resource, low-complexity care settings, and none to date in humanitarian settings. This study aims to develop and validate a Modified Early Obstetric Warning System (MEOWS) to predict severe maternal outcomes in refugee camp health centers in Cox's Bazar, Bangladesh.
Methods: A retrospective case-control methodology was used, and de-identified obstetrics electronic medical records (EMR) from October 2017 to June 2024 were obtained via the camp's EMR system, NIROG, at two sites: Kutupalong and Balukhali. Data was split into developmental and validation datasets. Primary predictor variables were systolic blood pressure, diastolic blood pressure, and heart rate; secondary predictors included age, BMI, gravida, gestational age at birth, and elevated fasting blood glucose (FBG). Severe maternal outcomes were the primary outcome variable based on ACOG's Obstetrics Care Consensus and WHO's near-miss criteria. A stepwise logistic regression was used to create the model.
Results: Among 446 patients with complete data, 36 experienced SMOs. Controls were randomly selected and included at a 4:1 control-to-case ratio. At a 5% level of significance, only elevated FBG was associated with SMOs. Both the developmental and validation datasets revealed a fourfold higher likelihood of SMOs in patients with elevated FBG at 80% and 90% confidence, respectively. However, 43% of those with elevated FBG did not have a diabetes diagnosis.
Conclusion: These findings suggest that elevated FBG should be included in obstetrics early warning systems for the camp health centers and similar settings, as FBG is not regularly included in standard obstetrics early warning systems. Furthermore, the lack of associated diabetes diagnosis suggests a possible area for patient care improvement within the camp health centers in Cox's Bazar.

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Equitable Considerations in Disaster Medicine Operations

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Introduction: Equity is a critical component of disaster medicine, addressing the disproportionate vulnerabilities experienced by marginalized populations during crises. This study examines frameworks, practices, and innovations designed to integrate equity into disaster response, aiming to improve outcomes and resilience while mitigating disparities.
Methods: Key frameworks, including those from the WHO, FEMA, and SPHERE, were analyzed for guiding equitable disaster responses. Strategies such as cultural competence, inclusive communication, and equitable resource allocation were reviewed alongside technological innovations like telemedicine, geospatial mapping, and data tracking systems. Barriers, including financial constraints, systemic inequities, and implicit bias, were explored to identify actionable solutions.

Results: Equitable disaster responses were found to enhance survival rates, recovery speed, and community resilience. Frameworks emphasized reducing health disparities and prioritizing vulnerable populations. Innovations, such as real-time data systems and multilingual communication platforms, effectively targeted underserved areas. Persistent barriers included a lack of training, systemic biases, and challenges in resource allocation, highlighting the need for comprehensive policies and collaborations.
Conclusion: This study underscores the imperative of equity in disaster medicine, advocating for strategies that foster inclusive, effective, and fair disaster response operations. Integrating equity into disaster response necessitates a multifaceted approach, combining robust frameworks, actionable policies, and technological advancements. Addressing implicit bias and improving cultural competency among responders are essential to equitable care delivery. Future efforts should prioritize real-time data use, stakeholder engagement, and legislation to institutionalize equity in disaster planning and response.

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A Retrospective Analysis of ED Attendance Trends by Under 6-Year-Olds and Under 8-Year-Olds Following the Implementation of Free GP Care for Those Age-Groups in Ireland

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Introduction: The Irish government has sought to improve access to primary care by introducing free GP cards for under-6-year olds in 2015 and under-8-year-olds in 2023. This retrospective review analyzed the impact on Emergency Department (ED) attendance in Wexford General Hospital (WGH).
Methods: ED attendance data from before and after the implementation of the new policy was collated from the automated system-generated attendance reports. For under 6-year-olds, data from July 2014 to June 2015 was compared to July 2015 to June 2016. For the under 8-year-olds, data from August 2022 - July 2023 and mean annual data from August 2014 till July 2023 were compared to August 2023 - July 2024. Interpretation of the results was correlated with the national census data from 2011, 2016, and 2022.
Results: Despite an anticipated decrease in ED attendances in this age group due to apparent improved access to primary care, there was a 33.2% increase in under 8-year-olds presenting when comparing 2022/2023 to 2023/2024 (n = 5702 to n = 7595), and a 0.72% increase in under 6-year-olds in 2014/2015 to 2015/2016 (n = 4148 to n = 4178). Mean analysis from 2014/2015 to 2022/2023 revealed an increase of 38.34% (n = 5490 to n = 7595) for the under-6 population. This is not accounted for by a growth in this population group, according to census data from 2011 to 2022.
Conclusion: Despite the initiative to improve access to primary care for children, an increase in the number of ED attendances in this patient group was noted. It is unclear what this apparent paradox can be attributed to, but it would be beneficial to further compare how many of these ED attendances were referred by GP's before and after the introduction of the new policies, and to correlate this with the number of GP's practicing in the WGH catchment area over this period.

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Critical Factors for Saving Children in the 2023 Türkiye Earthquake

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Summary: Children are the most affected population by natural and man-made disasters because of their physical and psychosocial vulnerability, high dependency on parents and other caregivers, and limited voice and representation. Pediatric needs should be considered in all disaster plans and response efforts. The far-reaching impact of a major disaster encompasses inadequate search and rescue efforts, transportation issues, insufficient medical personnel, and limited bed capacity. Reaching victims within the first hours may be challenging due to various factors, including health workers themselves being earthquake victims, extensive damage to access roads, and the destruction or damage to hospitals. The increasing need for healthcare professionals could give rise to a need for field hospitals and volunteer health workers. A team of pediatricians, orthopedic surgeons, plastic surgeons, and experienced team leaders is crucial for the medical and surgical management of pediatric mass-casualty events. Medical treatment and hospitalization can vary depending on the time elapsed since the event, the distance to field hospitals or hospitals located in remote, unaffected regions, the average age of the affected population, and the type of disaster. This presentation addresses the challenge of caring for children and the critical factors to be considered in disaster management for earthquakes, based on experiences gained from the 2023 Türkiye earthquake.

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The Relationship Between Stigma and Mental Health Challenges Among First Responders in New York State

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Introduction: First responders are regularly exposed to high-stress situations, traumatic events, and life-threatening environments. The constant barrage of intense scenarios and critical incidents, along with chronic stressors of the job, places them at risk for burnout and the development of mental health conditions such as depression and anxiety. Stigma plays an important role in responders' willingness to access mental health care. The Mental Health Needs Assessment (MHNA) explores issues related to mental health and stigma among first responders in New York State (NYS).
Methods: The MHNA is based on a representative, statewide web survey and qualitative focus groups. The sampling frame included first responder occupations across NYS. The final sample is 6,003.
This analysis will use Logistic Regression analysis to explore the relationship between stigma and mental health conditions, such as PTSD. We hypothesize that higher levels of stigma are related to a larger gap between perceptions of self and the field as a whole.
Results: Initial MHNA analysis included descriptive reports of the impacts of first responder work on mental health and the barriers to seeking care. Descriptive statistics show that stigma is a barrier to seeking mental health care for more than 80 percent of the first responder population. Descriptive statistics also show a discrepancy between first responders' reports of mental health conditions (i.e., depression or PTSD) for their field and themselves; first responders report higher incidents of mental health conditions in the field than for themselves.
We will test the relationship between stigma-related barriers to seeking mental health care and the gap between the perception of need for the field and self.
Conclusion: Addressing stigma as a barrier to mental health care among first responders is essential to increasing access to services. In this tabletop presentation, we will present our findings and facilitate a discussion to generate potential solutions.

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The Hidden Toll: Secondary Health Consequences of Natural Disasters in Japan - A Systematic Analysis of 1,557 Studies

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Introduction: While disasters directly claim many lives, secondary health effects among disaster-affected populations can be equally lethal. This scoping review aimed to map scientific evidence regarding secondary health effects following natural disasters in Japan.
Methods: A systematic search was conducted using five databases: MEDLINE, CINAHL, EMBASE, PsychINFO, and Ichushi Web. Primary screening was performed independently by two blind reviewers who assessed titles and abstracts for inclusion. Descriptive statistical analysis was conducted on papers that passed secondary screening.
Results: The database search yielded 16,870 papers, with 5,900 duplicates removed. Of the 10,970 papers screened, 1,557 met the inclusion criteria. The most frequently studied disasters were the Great East Japan Earthquake (n = 662, 42.5%), COVID-19 pandemic (n = 517, 33.2%), Great Hanshin-Awaji Earthquake (n = 102, 6.6%), Fukushima Daiichi Nuclear Accident (n = 90 papers, 5.8%), and Kumamoto Earthquake (n = 63, 4.0%). Predominant study designs included cross-sectional/observational studies (n = 660, 42.4%), follow-up studies (n = 490, 31.5%), survey research (n = 136, 8.7%), comparative studies (n = 102, 6.6%), and data analysis studies (n = 98, 6.3%). The most commonly investigated health conditions were psychiatric disorders (n = 824, 52.9%), followed by cardiovascular diseases (n = 163, 10.5%), health-related behaviors (n = 117, 7.5%), endocrine/metabolic disorders (n = 92, 5.9%), and respiratory diseases (n = 77, 4.9%).
Conclusion: This scoping review captured a comprehensive overview of health effects following natural disasters in Japan, providing valuable insights into the patterns and distribution of secondary health impacts in disaster-affected populations.

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Disaster Medicine International Human Rights Law/ International Humanitarian Law: From the Experiences of Support for Disaster-Affected Foreigners and the Process of Preparing for Hospital ERU

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Summary: The importance of considering disaster medicine from a legal perspective has long been recognized. This presentation discusses recent international human rights law/ international humanitarian law themes in disaster medicine in Japan and overseas, as well as the possibility of collaboration with related academic societies.

1. Cases of support for foreigners in disaster-affected areas.
J-MIND is the disaster medical interpretation network for the support of foreigners in disaster-affected areas in Japan. It requires a combination of theological backgrounds and a practical foundation in international human rights law to ensure no one is left behind, even in disaster situations.

2. In the process of preparing the Hospital ERU (Emergency Response Unit)
The Japanese Red Cross Society is preparing a Hospital ERU, where we must assume several situations related to international human rights law/international humanitarian law. This process

would have many things to do with other GOs and NGOs with similar plans to open emergency hospitals abroad. As disaster medicine in Japan becomes more globalized, coordination in many areas, including international law, will be necessary.

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An Overview of US One Health Initiatives: Conflicting Roles and Authorities between Public Health and Emergency Management during Animal Health Infectious Disease Outbreaks

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Introduction: One Health plays an important role in public health emergencies and pandemic preparedness. Successful public health interventions of infectious disease spread require cooperation of human health, environmental health, and animal health partners. However, One Health is still a new policy initiative in the United States. Few studies have looked at One Health initiatives across U.S. states, and which agencies are involved or excluded from such policy priorities.
Methods: To assess scope, primary data was collected from federal and state agencies, ASTHO, and the NCSL. This data was supplemented with elite interviews of state bureaucrat leaders in emergency management and public health to determine whether One Health was an explicitly mentioned policy priority in public health emergency preparedness across states.
Results: Less than a third of US states have/had a One Health Committee or Task Force, many of which have little authority or power to ensure intragovernmental collaboration and cooperation. One-fourth have a division within an agency dedicated to One Health, or they have One Health listed as an official policy priority. Very few states have passed laws or policies that establish official state One Health programs. One Health is most commonly located within a state department of health or public health. Moreover, relationships between emergency management and public health agencies are variable, with little coordination at the subnational level. Formal One Health initiatives are located in environmental health departments or siloed departments within public health. Informal initiatives are coalitions across academic research institutions, nonprofit actors, community organizations, and individual state bureaucratic "policy entrepreneurs".
Conclusion: While One Health pushes for a collaborative, multisectoral, and transdisciplinary approach, there is little evidence that such initiatives are occurring in practice across US states and localities. Stronger collaborations between emergency management and public health agencies are needed at both the state and local levels.

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The Impact of 24/7 News Coverage on the Mental Health of Israelis in the 'Iron Swords' War: A Cross-Sectional Analysis Among Television Audience

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Introduction: Based on much public demand, emergencies are extensively covered on televised news. As most individuals acquire knowledge about large-scale events through the media, these outlets play a crucial role by delivering vital information and safety guidelines to the public. However, they also simultaneously provide viewers with vivid, unsettling, and distressing details about casualties, impending dangers, and dire predictions, which could potentially be traumatizing and deter individuals from taking the necessary proactive protective behavior concerning each threat. This study aims to assess the impact of continuous 24/7 news broadcasting on the mental well-being of Jewish Israelis during the 'Iron Swords' War and compare it to findings from the 2014 Conflict.
Methods: An internet-based cross-sectional panel survey was conducted on 11–12 October 2023, during the 'Iron Swords' War. The study focused on Israel's adult Jewish population, enabling comparisons with a previous 2014 study.
Results: Participants reported news consumption changes, attitudes towards newscasts (burdensome, relaxing, stressful, addictive, Fear Of Missing Out [FOMO], avoidance), opinions on 24/7 news, and anxiety symptoms. Among 802 adult Jewish participants in Israel, 83.8% increased news consumption. While more than 70% of respondents found the newscast stressful at least a medium level, more than 40% said they do not try to avoid them at all. Nearly 24% found it very addictive. Women and younger individuals reported more FOMO, stress, and addiction. More than 70% reported experiencing at least one anxiety symptom, and 21% of all four. Linear regression explained 42.9% of the variance of reported anxiety, with gender, age, news stress, addiction, and FOMO as predictors.
Conclusion: The results show an increase in all measurements compared to a separate study conducted using the same tools in 2014. Jewish Israelis struggled with news consumption during the recent war, harming their mental health. Heightened anxiety was observed, compared to 2014, and affected all demographics.

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Pharmacist Association Role in the Management of nEMT Medical Logistics During the Cianjur Earthquake 2022

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Summary: An earthquake with a magnitude of 5.6 on the Richter scale on November 21, 2022, in Cianjur District, West Java Province, with a depth of 1 km from the surface,

was caused by the Cugenang Fault. Approximately 114.683 people were affected and were IDPs. Of 47 primary health centers in Cianjur, 13 health centers experienced major damage. Medical logistics management is urgently needed at critical times like this to distribute medicines, medical devices, and disposable medical supplies to the affected areas to immediately replace the stock of health centers or village midwives that have been used, as well as to manage aid so that it does not pile up in the health cluster coordination post.

This field report was written using an observational descriptive approach, where the authors were part of a joint team sent by Universitas Gadjah Mada. The team consists of a management team, which is deployed to assist in the management of the health emergency operation and cluster coordination post (HEOC), and one n-EMT type-1 mobile to provide health assistance in the affected population attached to local health providers such as village midwives or primary health center (Puskesmas).

The lesson learnt was that there was no accumulation of medical logistic donations at the Health Cluster Post or the district pharmacy installation (IFK). The head of the Cianjur district office hall was used as a temporary storage place for donated logistics by nEMT and other volunteer and distributed back to nEMT with incomplete drugs for their service activity in IDPs. In one month of response operations, the HEOC was able to mobilize donations to serve 1388 health posts operated by nEMTs, 163 primary health centers, and 32 hospitals. The operationalization of the Cianjur HEOC's logistics team is supported by adequate pharmaceutical personnel from the Indonesian Pharmacists Association (ATB-IAI).

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Resilience and Adaptation in Prolonged Conflict: A Longitudinal Analysis of Ukrainian Responses During the War with Russia

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Introduction: The military conflict between Russia and Ukraine that emerged in February 2022 transitioned in mid-2023 from an "existential war" into a "war of attrition." A distinct division within society marks this new phase. On one side are those actively engaged in the war effort, and on the other are individuals who have become passive or indifferent regarding the ongoing war as the new normal.

Methods: The longitudinal study assessed the impact of a prolonged conflict on resilience and coping mechanisms, based on two samples (T1 – July 2022 [N = 1001]; T2 – November 2023 [N = 2247]). Data were collected through internet panels' respondents who completed a structured quantitative questionnaire.

Results: A significant decrease was found in three types of resilience (individual, community, and societal), hope, sense of danger, perceived threats, and PTSD symptoms during the second versus the first measurement. The best predictor of societal resilience was government support. The best predictor of individual resilience was community resilience. The best predictor of PTSD symptoms was perceived threats. The predictors explain 68% (T1) and 60% (T2) of societal resilience, 19% (T1 and T2) of individual resilience, and 58% (T1) and 12% (T2) of PTSD symptoms.

Conclusion: Findings suggest that 'routinization' of an ongoing emergency is formulated, allowing the population to coexist with the adversity and accept the war as the "new normalcy." Nonetheless, the future is perceived as uncertain, leading to a decline in hope. Strategies that focus on bolstering resilience during adversities should consist of social support mechanisms that enhance the population's hope and morale and build the government's trust and support.

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Evaluating Accuracy in Crisis Data: The Impact of Sampling Methods in Disaster Health-Research

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Introduction: During the COVID-19 pandemic, reliable data to inform public health policy-making was needed. Misclassification or bias in crisis needs assessments can lead to inadequate or misdirected resources. This study assessed differences in prevalence and risk factor associations for psychological well-being across two datasets examining the COVID-19 pandemic public health impact, focusing on how these differences relate to the sampling methods used.

Methods: Data was obtained from two studies with different sampling **Methods:** 1) a quarterly cross-sectional panel study (N ~ 5.000 per wave), and 2) a biennial public health monitor with targeted social media sampling (N ~ 70.000 per wave). Both online questionnaires were distributed among Dutch youth (16-25 years) in June 2022, in which psychological well-being was assessed using the Mental Health Inventory 5 (MHI-5). Differences in the prevalence between the two data sets were assessed using Wilcoxon rank sum tests and Welch two-sample t-tests. Risk factors were studied using linear regression. To determine whether there was an inherent effect due to the difference in sampling methods, propensity score matching was conducted on demographics using nearest neighbor matching.

Results: Psychological well-being was found to differ significantly between the two datasets, with the mean difference in MHI-5 score being 4 points lower for data obtained through social media sampling. Regarding risk factors, having trust in

the future and experiencing various nonspecific symptoms revealed strong associations in both datasets. Between the datasets, notable associations were found with ongoing suffering from COVID-19-related experienced events in the panel data and with primarily demographic variables in the social media sampling data. The significantly lower MHI-5 score persisted after matching the participants based on demographics.

Conclusion: Findings underscore the importance of taking precautions with interpreting the findings from social media-based sampling methods, as they run an increased risk of producing biased information for public health policy-making.

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The Belgian Incident Tracking System as an Integrative Health Tool

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Summary: In Belgium, the Ministry of Health is responsible for the medical-psychosocial disaster care. One of the tasks is registering all those affected, wounded, and not-wounded. The evaluation of the Brussels Bombings (2016) showed that registration, collecting, processing, and disseminating data about those affected was difficult and became almost impossible in complex multi-site incidents.

This was the start of the Belgian Incident Tracking System (BITS) project. This system now collects, processes, and generates data on persons involved in an emergency situation. It traces and identifies those affected throughout both the medical and the psychosocial chain in a simple way.

Each relief worker can, based on their specific profile, complete the pathway and file of those affected step by step, through a mobile or web-based application, online and offline. This applies to the relief workers who are dispatched to the incident, the advanced medical units, the hospitals to which the injured are taken, and all the relief workers in the reception centers.

With BITS, psychosocial workers in a call center or at a reception center can look up missing persons within the relief chain. If the missing person is not found, a thorough registration of the search query is filed. This data can contribute to the identification of unknown persons, those seriously injured/unconscious, or deceased. For those who leave the scene without seeking help. BITS will enable an online "I Am Safe" counter.

Finally, a wide variety of lists, according to European privacy regulations, can be generated and shared with partners within a crisis center or with actors responsible for the aftercare. Whereas BITS is in production and is being used in incidents right now, the developments are still ongoing, including lessons learned after every exercise and/or incident.

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Navigating Generosity of Medicines (Gen-MED): A Delphi Study to Prioritize Research Questions from the Environmental, Economic, Social Science and Humanities, and Health Perspectives

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Introduction: News of disasters often prompts individuals, organizations, and countries to seek ways to support affected areas. However, the notion that "any donation is a good donation" can lead to unintended consequences, particularly with inappropriate pharmaceutical donations. The practice of inappropriate donations can burden recipient countries with the need to manage, store, and dispose of unwanted or expired medicines, wasting valuable resources, which leads to adverse effects on the environment, the economy, health, and quality of life. This study aimed to develop a prioritized list of research questions (RQs) to investigate donated medicines, drawing on insights from international interdisciplinary experts.

Methods: There were 46 people invited from over 10 countries and 15 disciplines to participate through an asynchronous Delphi study conducted in four rounds using an online questionnaire platform (Qualtrics) from May to September 2024. Round 1, participants suggested RQs; in Round 2, they ranked and commented on draft questions using a 9- point Likert Scale. Consensus was defined as a mean score of ≥ 7, with an interquartile range (IQR) ≤ 3, with no answer ≤ 3. Round 3 involved controlled feedback for participants to re-rank questions that did not achieve consensus on a 4-point Likert Scale; Round 4 sought final approval for the generated list.

Results: Twenty-four experts participated, representing seven countries,14 areas of research expertise, and 10 types of methodology expertise. The panel reached consensus on 21 RQs from an initial list of 29, encompassing seven social science and humanities, six environmental, four health, three economic questions, and one interdisciplinary perspective.

Conclusion: This study successfully identified key research priorities concerning donated medicines, emphasizing the need for a coordinated approach to mitigate harm and enhance the effectiveness of pharmaceutical donations. Future research should focus on addressing these questions to develop best practices that balance humanitarian assistance with responsible resource management, ultimately supporting disaster-affected communities more sustainably.

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Exploring the Role of Human Loss in the Long-Term Mental Health Impact of Disasters: A Multilevel Meta-Analysis of Longitudinal Studies

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Introduction: The long-term mental health impact of disasters is still poorly understood. This multilevel meta-analysis aimed to assess the impact of the number of fatalities while simultaneously controlling for multiple factors. The objective was to verify whether there is an association between the extent of fatal casualties during a disaster and the mental health impact on exposed populations.
Methods: Medline, PsycInfo, PTSDpubs, Web of Science, and SocINDEX were searched for studies published from January 1946 to July 2024 (PROSPERO 2020, CRD42020108528). Longitudinal data from 71 studies (76 disaster-exposed samples) were extracted and augmented with fatality data sourced from Wikipedia. Fatality categories (<10, 10-99, 100-999, 1,000-9,999, >10,000), disaster type (natural vs. human-made), category (e.g., earthquakes, floods, terrorist attacks), mental health outcome (e.g., post-traumatic stress disorder, depression, anxiety, grief, suicidality), population age groups, disaster year, measurement month, study quality, and country income were included in the analysis.
Results: The pooled average prevalence of mental health problems was 21.81% (95% CI [10.07-40.98]). From months 1 to 300, the post-disaster mental health burden decreased after an initial peak in the first months, followed by a second peak before declining again ($p < 0.001$). The prevalence of mental health problems did not differ significantly between mental health outcomes, disaster types or categories, population age groups, disaster year, study quality classification, or country income context. When controlling for these factors, fatality categories (reference: <10) had no significant effect on mental health. The proportion of fatalities differed between income groups. In 67% of disasters in upper-middle-income countries, fatalities exceeded 10,000, while 63% of disasters in high-income countries had fewer than 100 deaths.
Conclusion: Although this controlled multilevel meta-analysis demonstrates that the mental health impact of disaster exposure is profound and long-lasting, it did not confirm that a more excessive number of fatalities was related to increased mental health problems.

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Understanding the Determinants of Long-Term Mental Health Impacts of Disasters: A Systematic Review

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Introduction: Past events have demonstrated that crises and disasters can profoundly impact the mental health of those affected. To date, both practitioners and academics have focused on mitigating short-term adverse outcomes through psychosocial care, while medium- and long-term consequences have been relatively overlooked. Although a growing number of studies point to waves of mental health problems in the post-disaster timeline, little is known about predictors, especially in the early stages. This study aims to identify potential determinants of mental health for individuals at least 12 months after a disaster event.
Methods: This literature review searches Medline, PsycInfo, PTSDpubs, Web of Science, and SocINDEX for studies published from January 1946 to July 2024. It includes studies that examine the prevalence of mental health problems, such as post-traumatic stress disorder, among survivors, along with information on predictors at various time points.
Results: A variety of factors were identified, which can be categorized into two dominant groups: vulnerability-related factors (e.g., sociodemographic risk factors such as gender or age, prior health problems, and lack of social support) and exposure-based factors. The latter range from primary exposures (e.g., danger, loss of loved ones or property, time since exposure or loss) to secondary exposures (e.g., loss of income, property damage, and relocation). In most cases, the identified factors were linked to sociodemographic risk factors and measured concurrently with mental health issues. However, several studies provided information on predictors identified at earlier time points (cross-lagged).
Conclusion: The factors identified in this study are valuable for policymakers, practitioners, and scholars seeking to better understand and address the mental health burden at various stages post-disaster, particularly for at-risk populations. Researchers should assess vulnerability and exposure-based factors more systematically in longitudinal monitoring programs to enhance the knowledge base regarding early predictors.

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Using the Symptoms and Perceptions (SaP) Questionnaire for Disaster and Environmental Health Research: Analysis Across Multiple Exposure Contexts

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Introduction: The Symptoms and Perceptions (SaP) questionnaire is a tool developed to assess the occurrence, duration, and severity of physical and psychological symptoms in epidemiological research. The questionnaire covers up to thirty symptoms across multiple organ systems, alongside perceptions and causal beliefs. This study assesses the reliability and validity of the SaP using data

from five independent population studies, representing different sample groups, exposure contexts, and timeframes. The main objective is to better understand the potential for standardized symptom assessment in disaster and environmental health studies.
Methods: Data from five epidemiological studies in the Netherlands were combined and analyzed. Each health study employed the SaP questionnaire with minor variations in item structure and content (28 to 30 symptom items): Study 1. Electromagnetic fields (N = 5,933; 2011); Study 2. Pesticides (N = 3,756; 2017); Study 3. Industrial area with multiple incidents (N = 2,394; 2020); Study 4. COVID-19 pandemic in a large province (N = 45,903; 2020); Study 5. National health monitor (N = 315,586; 2022). Various indicators of consistency and validity were assessed. Confirmatory factor analysis was performed to evaluate construct validity and dimensionality. In the analyses, a broad range of additional variables was included, such as psychological measures, health data registered in primary care, and proxies of actual and perceived exposure.
Results: Analyses showed good internal consistency (Cronbach's alpha > 0.80 across studies) and convergent and divergent validity, based on associations between symptom scores and data from diverse constructs. Higher levels of perceived exposure were typically accompanied by higher levels of symptom report. The factorial structure of the symptom assessment was confirmed, yielding consistent clusters of symptoms across datasets, in line with primary care classifications.
Conclusion: While existing literature predominantly focuses on psychological problems or disorders, a comprehensive and standardized symptom assessment approach is of importance, regardless of the nature and timeframe of an exposure case.

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Public Health System Resilience: Reflections from the COVID-19 Pandemic Response

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Introduction: The COVID-19 pandemic had profound impacts across society, including strain on public health and health system resources globally. Given the increasing threat of public health emergencies, it is important to illuminate understandings of public health system resilience. The study objective was to explore public health practitioners' experiences of the COVID-19 pandemic to better understand factors that contribute to public health system resilience.
Methods: The qualitative design included key informant interviews and focus groups conducted at five public health organizations in provinces across Canada at varying sub-national levels. Practitioners in roles related to public health emergency management were recruited to participate. Data were collected from February 2023 to June 2024. Reflexive thematic analysis was then completed to generate descriptive themes.
Results: A sample of N = 70 participants was captured across the focus groups, and N = 34 interviews were completed across the organizations. Analysis identified five themes related to public health system resilience: 1) Prioritize staff wellness as an essential component of a resilient workforce; 2) Identify and map staff assets (strengths, skills, and knowledge) to support purposeful redeployment for future responses; 3) Prioritize and maintain diverse partnerships through proactive engagement to enhance communication and collaboration; 4) Ensure accountability to implement 'lessons learned' to support evaluation and future planning and preparedness activities; and 5) Nimble investment and training is essential to diversify and maintain preparedness for future threats.
Conclusion: Public health threats are becoming increasingly frequent and complex for systems to manage. Considering strategies that support system resilience is essential to preparedness. The results of this study demonstrate that workforce capacity, collaboration, learning, and resourcing remain crucial aspects of resilience based on COVID-19 experiences. Future work can integrate COVID-19 pandemic learnings with pre-pandemic perspectives to inform future-oriented resilience strategies.

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Mental Health Needs and Challenges Among EMS Professionals

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Introduction: Emergency Medical Services (EMS) personnel are regularly exposed to high-stress situations, traumatic events, and life-threatening environments. The constant barrage of intense scenarios and critical incidents, along with chronic stressors of the job, places them at risk for burnout and the development of mental health conditions such as depression and anxiety. The Mental Health Needs Assessment (MHNA) explores issues related to mental health for EMS in New York State (NYS).
Methods: The MHNA is based on a representative, statewide web survey and qualitative focus groups. The sampling frame includes first responder occupations across NYS, including EMS. The final EMS survey sample was 2,229. Survey data were evaluated through basic descriptive statistics. Thematic qualitative data analysis was applied to focus group data.
Results: There are multiple sources of stress for EMS. Critical incidents, like traumatic events, and workplace challenges, like toxic work culture, were identified as sources of stress by the majority of EMS. Approximately 4 in 10 EMS cited public perception of the profession, difficulty with colleagues, and shift-work as stressful elements of their work. EMS reports a range of mental health challenges. Stress was experienced by more than two-thirds of EMS. A majority of EMS reported having experienced symptoms associated with depression and anxiety. Just

under half experienced symptoms associated with PTSD. Thoughts of suicide were reported by 20 percent. EMS encounters barriers to seeking mental health care. Approximately eight in ten reported stigma, fear of being seen as unreliable, and lack of culturally competent providers as barriers to seeking care. About three-quarters cited concern about negative career impact and concern about confidentiality as barriers to seeking care.

Conclusion: EMS in NYS, as elsewhere, faces multiple stressors, endures a range of mental health challenges, and confronts barriers to seeking mental health care. MHNA revealed important information and implications for improving interventions among EMS.

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Implementation of Rapid Mental Health Response Teams within 24 Hours: The Story of IDF's Medical Corps Mental Health Officers during the First Days of the October 7 War in Israel

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Introduction: On October 7, 2023, Hamas executed a surprise attack on Israel, resulting in over a thousand fatalities and more than 1,900 injuries, with around 360 individuals sustaining critical injuries. This assault included acts of abduction, massacre, rape, war crimes, and crimes against humanity. The extensive casualties, affecting both Israelis and foreign nationals, predominantly civilians, were unprecedented. This study aims to investigate the methodologies employed in delivering rapid professional mental health care to soldiers on the battlefield within hours of impact and to assess these interventions' effectiveness and immediate outcomes.

Methods: A comprehensive analysis of 50 case studies involving the deployment of rapid professional mental health response teams was conducted. Cases were selected based on random selection from the military medical record system. Additional Data sources included official reports, operational logs, and after-action reviews. The analysis focused on operational procedures, intervention effectiveness, and immediate outcomes.

Results: The study yielded five key findings: 1. Rapid professional intervention significantly enhanced an individual's capacity to resume and perform combat missions. 2. It is essential to establish a senior logistical framework that allows safe navigation and access. This requires active participation from senior commanders. 3. Treated soldiers who returned to duty demonstrated operational efficiency comparable to their untreated counterparts. 4. Two-thirds of the patients requested further treatment afterward. 5. The need for immediate psychological assistance was evenly distributed between combat personnel and support staff.

Conclusion: This research presents a novel and substantive framework for analyzing case studies in unprecedented, surprising, and extreme contexts. The resultant findings have the potential to serve as a foundational basis for the development of mental health intervention strategies applicable to military personnel across diverse combat scenarios within Western armed forces globally. Future research should focus on long-term outcomes and the potential application of these rapid response models in non-military crises.

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Home for Good: A Public Health Focused Direct-to-Housing Encampment Decommissioning Initiative in New Orleans Alleviates Local Burden of Emergency Services

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Introduction: Homeless encampments present public health threats to individuals and communities alike. Given the significant risks of traumatic injury, disease morbidity, and early mortality, public health mitigation efforts are critical. "Housing First" approaches have recently gained traction for their humane perspective and efficacy, and research supports a positive impact of housing on individual health outcomes. The present study spotlights a public health approach to a direct-to-housing encampment decommissioning initiative started in New Orleans in 2023. We focus on its two pilot sites, which supported encampment residents directly into housing. We use 911 data as our principal indicator, as it simultaneously reflects community wellbeing and burdens on local emergency systems.

Methods: To quantify the impacts of encampment decommissioning on emergency service utilization, we analyzed 911 data trends across three incident categories: "Medical," "Trauma," and "Severe (with likely or confirmed fatality)." Call volume and types at each pilot site were analyzed for 6 months during active encampment presence, and 6 months after residents were housed and sites closed. Using a one-sided t-test method at alpha = 0.05, we evaluated the statistical significance of any decreases in average monthly call volume following encampment closure across all 3 categories at both sites.

Results: Before encampment decommissioning, both sites experienced relatively high call volumes for a relatively small geographic area. At each, "Medical" and "Severe" call rates were significantly lower across the 6 months following encampment closure ($p < 0.05$). At one site, a drop in "Severe" and "Medical" calls per month approached or exceeded 90%.

Conclusion: Our study offers a broader perspective, framing encampments as public health emergencies and illustrating the community-level impacts of prioritizing direct housing placement and definitive closure. The resulting drop in calls for service not only reflects the health hazards of encampment

living but also implies reduced burdens on first responders, ED personnel, and neighborhoods post-closure.

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Community Pharmacists' Insights and Knowledge on Disaster Management: An Online Survey in Flanders (Belgium)

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Introduction: The objective of this research was to assess community pharmacists' insights, knowledge, attitudes, and willingness to engage in disaster management via an online survey.
Methods: Informed by a literature review, the survey was collaboratively developed and pilot-tested among a small group of pharmacists. Recruitment was facilitated through local pharmacists' organizations. Analysis included descriptive statistics of the Likert scale questions and qualitative methods for open-ended questions.
Results: The survey included 37 questions and received 160 complete and 50 partial responses. Most pharmacists recognized their specific role in emergency response and expressed willingness to fulfill it, showing greater readiness for health-related events. Many pharmacists reported insufficient preparedness and a lack of awareness of potential risks, with few having developed disaster preparedness plans. Pharmacists were significantly better prepared for local disease outbreaks and pandemics than for natural disasters or war. A small minority had undergone formal disaster management training, yet a large majority showed willingness to engage in further training initiatives, preferably through online platforms. The survey is currently being extended to the French-speaking region of Belgium. Additionally, we are exploring opportunities for collaboration in disaster management among pharmacists in various settings, including community, defense, and hospital environments.
Conclusion: In Flanders, Belgium, pharmacists are not adequately equipped for emergencies but recognize their potential role and are open to pursuing additional education to enhance their disaster preparedness. The results should inform the development of training programs across different subdisciplines and could ultimately support the organization of simulation exercises.

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The Association Between Mode of Transport and Out-of-Hospital Cardiac Arrest Outcomes in Developing Countries

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Introduction: Out-of-hospital cardiac arrest (OHCA) is a critical medical emergency that poses significant global public health concerns. The survival rates for OHCA remain alarmingly low, contributing to as high as 10% of the total mortality in developing countries. This study aimed to analyze survival outcomes of OHCA patients in various developing countries, related to the mode of transport to the Emergency Department (ED).
Methods: This study was a retrospective analysis of the Pan-Asian Resuscitation Outcomes Study registry (PAROS) data from 2015-2018. PAROS study is a multi-center cohort study providing baseline information on OHCA epidemiology, management, and outcomes. Data was analyzed from Thailand, China, the Philippines, and Vietnam. The primary outcome was return of spontaneous circulation (ROSC), and the secondary outcome was survival to discharge or 30 days post-arrest. Subgroup analysis was performed within each country.
Results: The study included 3,905 patients. 1,945 (49.8%) patients were conveyed by Emergency Medical Services (EMS), 448 (11.5%) by private ambulance, 1,148 (29.4%) by private transport, and 364 (9.32%) by public transport. The public transport group had the lowest ROSC rate at 17.0%, compared to EMS (22.7%), private ambulance (29.0%), and private transport (25.8%). Survival rate was also the lowest for the public transport group at 4.12%, compared to EMS (5.3%), private ambulance (12.5%), and private transport (5.05%). Both ROSC rate and survival outcomes were statistically significant. Subgroup analysis showed a significant relationship between the mode of transport and outcomes for Vietnam and China.
Conclusion: In patients with OHCA in various developing countries, the mode of transport is associated with differing ROSC rates and survivability outcomes. More education of EMS services and other prehospital interventions, such as bystander CPR, can be done in these countries to improve outcomes for OHCA patients. Further research can be done to analyze how other prehospital interventions can affect outcomes for OHCA patients in developing countries.

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Over-Adaptation Masking PTSD Symptoms: Two Cases From the Fukushima Nuclear Disaster Area

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Summary: This study presents two cases of late-onset Post-Traumatic Stress Disorder (PTSD) among survivors of the 2011 Great East Japan Earthquake, tsunami, and nuclear disaster. These cases were observed in Minamisoma City, Fukushima Prefecture, which experienced multiple subsequent disasters, including floods (2019), major earthquakes (2021-2022), and the COVID-19 pandemic (2020-2021). The region underwent mandatory evacuation for over a year following the

nuclear disaster, significantly disrupting community structures and social support systems.
The cases were documented through clinical observations at a psychiatric practice established in 2016 in Minamisoma City, located within 20km of the Fukushima Daiichi Nuclear Power Plant. Both patients were followed longitudinally from their initial presentation through the recognition and treatment of their PTSD symptoms. Detailed clinical interviews and psychological assessments were conducted throughout the treatment period. Both patients provided written and verbal consent to present their cases in academic settings and publications.
Both cases exhibited a pattern of initial over-adaptation during the first few years post-disaster, actively participating in community recovery efforts and displaying apparent resilience. Subsequently, they developed depressive symptoms, leading to psychiatric intervention. Despite receiving treatment, their conditions fluctuated significantly. Several years of therapeutic engagement were required before patients recognized their trauma-related memories and associated symptoms. Retrospective analysis revealed that their initial over-adaptation to post-disaster community needs potentially masked underlying PTSD pathology, complicating early diagnosis and intervention. These cases highlight the importance of recognizing delayed-onset PTSD in disaster survivors, particularly when initial over-adaptation may obscure underlying trauma. The study proposes preventive strategies and screening protocols for similar mental health issues in future disaster scenarios, emphasizing long-term monitoring.

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Environmental Justice for All - A Call for Big Data Analysis to Promote Health Equity

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Introduction: The primary mission of Environmental Justice policy and programs is to ensure that all individuals, regardless of their backgrounds, are treated fairly and included in decision-making processes that affect their health and the environment. It highlights the intersections of environmental policy, social equity, and human rights, advocating for fair treatment and meaningful involvement of all individuals in environmental decision-making processes. Historically, communities of color, low-income populations, and indigenous groups have borne the brunt of pollution, resource depletion, and climate change, often due to systemic inequalities and discriminatory practices. Core to the implementation and measurement of environmental justice is the identification, collection, and analysis of the drivers of health data that describe the causal relationships between environmental, social, and genomic factors and document the health impacts that result from these relationships.
Methods: Very large volumes of publicly available location and time-specific Environmental, Social & Genomic Drivers of Health (ESDoH+G) data already exist for analysis. The World Health Organization (WHO) and national health agencies worldwide have amassed the location and time-specific health impact data (ICD codes) needed to statistically establish the causal relationships.
Results: The total worldwide ESDoH+G data housed in public and private databases as of 2023 is estimated to exceed 300 exabytes (300 million terabytes). Despite interest and attention to ESDoH+G data from governments, researchers, healthcare, NGOs, and private industry, most of this data has never been systematically correlated or subjected to big data analysis and predictive analysis.
Conclusion: An extensive big data analysis using the publicly accessible ESDoH+G data and health impact data would demonstrate correlations and causative relationships between ESDoH+G factors and health outcomes. By leveraging big data, further analyses would inform policies and decisions that can help reduce health inequities.

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Exploring the Role of Hypnosis in Medical Care: A Bibliometric Analysis and Narrative Review

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Introduction: Hypnosis is increasingly recognized as an effective complementary therapy in medical care, particularly for chronic pain management and mental health. Interest in hypnosis research has grown significantly over the past century, driven by the need for scientific evidence in clinical interventions. The primary aim of this study is to explore publication trends related to hypnosis from 1900 to 2024 through an electronic search, analyzing articles to understand its diverse applications in medical care, as well as to analyze publication trends, prominent journals, frequently cited authors, and collaboration patterns among researchers.
Methods: A bibliometric analysis was conducted on 3,609 articles retrieved from the PubMed database, followed by a narrative review of emerging themes. Tools like VOSviewer and CiteSpace were used to analyze publication trends, prominent journals, frequently cited authors, and collaboration patterns among researchers. Keyword relationships were mapped to uncover thematic clusters.
Results: The VOSviewer network visualization of keywords related to hypnosis identified six key thematic clusters, illustrating its diverse applications in health and wellness. One cluster focuses on pain management, particularly in chronic pain and anesthesia. Another addresses mental health, specifically anxiety and psychological distress. Additional clusters include behavioral change, complementary therapies like guided imagery, supportive oncology care, and various medical conditions through hypnotherapy. Hypnosis also shows promise in medical and disaster settings for alleviating trauma-related symptoms and managing acute stress responses. Together, these clusters highlight hypnosis's broad, interdisciplinary therapeutic potential.
Conclusion: This study provided a comprehensive overview of the role of hypnosis in medical care, highlighting diverse research areas from experimental foundations to clinical

applications. The findings aimed to inform future research and clinical practices, facilitating the integration of hypnosis into medical settings and potentially enhancing patient outcomes in pain management, psychological disorders, and psychological support.

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Planet Emergency Disaster Med Net

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Introduction: Over the past 20 years, there has been a global increase in health and humanitarian crises, conflicts, catastrophic events, and disasters, caused by multiple risk factors and increasing vulnerabilities, which are making our planet vulnerable, hence the need to widely inform and share the culture of risk reduction on these issues, using web information and communication technologies and strategies.
Methods: Planet emergency disaster med net was created as the first Italian web site platform for national and international sharing information on Disaster Medicine, Catastrophes, Conflicts and Humanitarian Crises to increase the knowledge of professionals and those who want to approach these issues from a perspective of "disaster risk reduction" and to foster an integrated view of the current crises of the planet and possible solutions. The guiding principles will be based on the concepts of Global Health and One Health.
Results: The goal of this project is to provide real-time information on planetary emergencies, disasters, conflicts, and humanitarian crises. The platform's inspiring principles are based on the concept of One Health, an integrated and unifying holistic approach that aims to sustainably balance and optimize human, animal, and ecosystem health, recognizing that the health of humans, animals (both domestic and wild), and ecosystems is inextricably linked, interdependent, and interconnected. Expected results will be to promote an integrated view of current crises on the Planet and possible solutions from a health and information perspective, following a global health approach, to improve resilience and promote disaster risk reduction.
Conclusion: Using communication, information technology, and new technologies, including artificial intelligence, as tools to increase capacity and skills in disaster risk reduction, to improve disaster resilience, and also encouraging new ways of strong cooperation and interaction through the promotion of a transnational collaborative network in disaster medicine.

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A Policy Brief Recommendation for One Health Integration With Disaster Health Management in ASEAN Member States: Lessons Learned From International Cooperation/International Organizations in Implementing One Health

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Introduction: Implementing One Health initiatives in middle-income countries in Southeast Asia is crucial for improving public health outcomes in the region. One Health is a holistic approach that recognizes the interconnectedness of human, animal, and environmental health. Many challenges are faced regarding public health emergency cases, cross-border collaboration and coordination, integrated surveillance, risk communication, and community engagement.
Methods: The authors facilitated a seminar and tabletop exercise among ASEAN member states to elaborate on best practices and lessons learned from international cooperation and international organizations in implementing one health. From the selected partners, such as the quadripartite (WHO-FAO-WOAH-UNEP), UKHSA, and GIZ, try to elaborate on more possibilities to link the global policy, such as frameworks and global instruments to be adopted and implemented in the regional, national, and sub-national context.
Results:

1. Periodic one health situation analysis, respectively in each AMS, to identify and update the key stakeholders and other relevant stakeholders implementing One Health.
2. Select and adapt the massive one-health tools developed by the Quadripartite and ASEAN to optimize the scope needed in the country.
3. Enhancing academic role to ensure the quality of tools, scientific evidence, and conducting more research and implementing activities.

Conclusion: The Launching of the ASEAN One Health Network (AOHN) and the Development of the ASEAN One Health Joint Plan of Action (ASEAN OH-JPA) provide a concrete work plan for One Health implementation. Elaborate on best practices and lessons learned from international cooperation and/or international organizations in implementing One Health, giving an understanding that a country's One Health situation is crucial for designing the agenda and mapping a country's needs and priorities. Moreover, through shared experiences, challenges, and opportunities was expected that be identified.

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One Health and Disasters: Why Veterinarians Should Have a Seat at the Emergency Management Table

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Summary: Natural phenomena may trigger disasters or have man-made causes, but one common factor in disasters of any kind is that they all involve animals. That reason alone necessitates veterinary involvement in disasters, but there are many other compelling reasons why veterinarians should be involved in mitigating these events. First, veterinarians possess unique training and broad experience in multi-species animal health and welfare, veterinary public health, epidemiology, biosecurity,

food safety, and systems thinking. This knowledge is explicitly needed in the planning for and response to disasters. Second, veterinarians' high-profile traditional roles in rescue and emergency treatment of animals are widely recognized. Through decades of disasters, veterinarians have come to be included in the first-responder group of medical professionals, along with physicians, nurses, paramedics, and others. Veterinarians work side-by-side with medical and allied health professionals in humanitarian efforts that help to protect and maintain the human-animal bond. Third, there are lesser-known activities veterinarians perform that make them highly beneficial to the health maintenance of people and animals in crises, including: 1) animal evacuation, 2) disaster assessment and disease surveillance, 3) food and water safety, 4) zoonotic disease, 5) animal disease control, 6) decontamination, 7) euthanasia and depopulation. Appreciative of these contributions, the American Veterinary Medical Association strongly recommends veterinary involvement in emergency management for planning and response operations regarding disasters. The relatively new One Health approach recognizes the interconnectedness of animal, human, and environmental health. It promotes collaboration among public and private entities, physicians, veterinarians, public health professionals, social scientists, and other science, health, and environmentally related disciplines. This team approach must be implemented during disasters to minimize negative impacts. As major contributors to health, veterinarians face challenges, obligations, and opportunities during natural and man-made disasters to support the health resiliency of animals, people, and the ecosystem.

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Nationwide Survey on Preparedness for the Health, Medical Care, and Welfare Coordination Headquarters of Local Governments in Japan

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Introduction: Establishing an effective management system is crucial for preparedness against large-scale disasters. This study aims to assess the preparedness of the Health, Medical Care, and Welfare Coordination Headquarters (HQs) across local governments in Japan.
Methods: In 2023, an email-based survey on disaster preparedness was conducted among 157 local governments in Japan, including 47 prefectures and 110 cities (including special wards) with health centers. Logistic regression analyses were used to calculate odds ratios (ORs) and 95% confidence intervals (CIs), adjusting for government categories. The independent variable in the analyses was prior disaster experience, defined as events requiring the activation of disaster response headquarters after July 2017, when the Ministry of Health, Labour, and Welfare requested local governments to establish HQs.
Results: Responses were received from 149 local governments (95%, including 46 prefectures and 103 cities). All prefectures (100%) and 77% of cities reported being prepared to establish HQs. However, only 54% of prefectures and 32% of cities conducted exercises for establishing or operating HQs. Additionally, 48% of prefectures and 47% of cities had established formats for assessing evacuation centers. The adjusted ORs (95% CIs) for conducting HQ exercises and for deciding assessment formats, with prior disaster experience as the independent variable, were 0.51 (0.24–1.13) and 1.61 (0.75–3.45), respectively.
Conclusion: While most local governments have prepared to establish HQs for large-scale disaster response, the proportion conducting exercises remains low. Governments with prior disaster experience were less likely to conduct exercises, possibly because they were preoccupied with recovery efforts and found it challenging to design exercise programs that could surpass the effectiveness of real disaster experiences. Conversely, these governments were more likely to have predefined assessment formats, possibly due to their use during past disasters.

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Reconstructing the Role of Plastic Surgeons in Disaster Response

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Introduction: The challenges of wars and disasters have historically driven innovation in plastic surgery. Plastic surgeons were compelled to advance the management of complex wounds and develop groundbreaking techniques to reconstruct disfigured bodies. This profound link between exigent circumstances and plastic surgery has been overlooked in recent years. Not only can plastic surgeons innovate under pressure, but they also adapt their expertise to diverse challenges, making them critical players in disaster response. This study examines the pivotal role of plastic surgeons in disasters.
Methods: This study conducted a comprehensive review of the literature to analyze the role of plastic surgeons in disaster response. Peer-reviewed journals, case reports, and historical accounts were examined to identify their contributions to both acute trauma management and long-term recovery.
The review focused on four key areas: (1) types of injuries commonly encountered in disaster scenarios; (2) specialized plastic surgery techniques; (3) the role of plastic surgeons within multidisciplinary disaster response teams; (4) long-term care and rehabilitation.
Results: In modern disaster scenarios, plastic surgeons bring unique and indispensable skill sets. They excel in managing complex injuries such as burns, wounds, and craniofacial trauma, employing skin grafts and free flaps. Plastic surgeons can also address long-term recovery needs, restoring functionality and aesthetic integrity. Their expertise makes them a vital component of disaster response teams, capable of addressing

both immediate and prolonged reconstructive challenges. Including plastic surgeons in disaster preparedness and response plans is essential to ensure comprehensive care.

Conclusion: Plastic surgeons play a critical role in disaster response, offering specialized skills in managing complex injuries. Their expertise in microsurgery, burns, wound care, trauma, and reconstruction makes them indispensable members of disaster response teams. Integrating plastic surgeons into disaster preparedness plans is essential.

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Public Health Emergency Focusing on Future Preparation – The Role of ASEAN

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Summary: In recent years, ASEAN has increasingly recognized the importance of adopting the One Health approach. The launch of the ASEAN One Health Network (AOHN) in June 2024, alongside the development of the ASEAN One Health Joint Plan of Action (ASEAN OH-JPA), represents significant steps toward enhancing preparedness for Public Health Emergencies (PHE) and disaster events among ASEAN Member States (AMS). To effectively address these challenges, it is essential to leverage existing governance capacities and resources through collaborative efforts. A comprehensive understanding of ASEAN's objectives is crucial for the successful implementation of the Network in bolstering future PHE preparedness. This report, derived from a policy brief, aimed to elucidate ASEAN's intentions and prioritize its strategic initiatives.

This policy brief was developed based on the experts' insights, qualitative data from responses from 10 AMS, and literature review studies. The three presenting experts were academicians, researchers, and practitioners. After the presentation session, one key question was given to the AMS: "How will your country or our region adapt for better future preparation?" and "What is ASEAN's role in the future preparation of PHE responses?"

The key messages and recommendations include (1) strengthening the integration of the ASEAN Coordinating Council and related platforms and networks for PHE and natural disaster management, (2) promoting regional knowledge management within the One Health Approach, and (3) initiating capacity-building efforts through collaborative drills for PHE and Public Health in Disasters.

As a conclusion, the insights and frameworks presented by the speakers have inspired ten AMS to further clarify the One Health network within ASEAN (AOHN), emphasizing the need for improved technical capacity building through collaborative drills, as well as enhancing information-sharing mechanisms and coordination for the implementation of One Health among the ten AMS in the context of the ASEAN OH-JPA.

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Bridging Silos: Planetary Health as a Framework for Unified Disaster Medicine Strategies

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Summary: Disaster medicine sits at the crossroads of health, environmental systems, and societal infrastructure. However, these domains often operate in silos, limiting their collective impact on disaster preparedness, response, and recovery. This submission examines how the Johns Hopkins Institute for Planetary Health and the Planetary Health Alliance are fostering a transdisciplinary approach to disaster medicine, integrating insights from diverse sectors to address systemic drivers of risk. By using Planetary Health as a unifying framework, the Johns Hopkins Institute for Planetary Health has aligned research, education, and operational strategies with the interconnected challenges of climate change, biodiversity loss, and human vulnerability. Key initiatives include fostering collaborations between public health, environmental science, engineering, and policy stakeholders to design cohesive and scalable disaster management practices.

This framework has resulted in innovative applications, such as incorporating biodiversity conservation into disaster risk reduction strategies and embedding sustainability principles into recovery processes. These approaches not only strengthen disaster resilience but also emphasize equity and sustainability, ensuring that solutions are impactful and inclusive. The success of this approach demonstrates that bridging silos can transform disaster medicine into a more effective and comprehensive discipline. By fostering a culture of transdisciplinary collaboration and innovation, universities can play a critical role in advancing disaster medicine to meet the complex challenges of the 21st century. This submission highlights the potential for Planetary Health to act as a catalyst for unifying efforts across sectors, providing a replicable model for other institutions seeking to align their disaster medicine programs with global sustainability and resilience goals.

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Challenges to Integrating Gender Based-Violence and Sexual Reproductive Health Services in Disaster Settings: An Implementation Research Study

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Introduction: Disaster can increase the vulnerability of women and girls to Gender-Based Violence (GBV) and limit their access to reproductive health (RH) services. This

implementation research explores the challenges of integrating GBV services within existing RH services in disaster-prone areas.
Methods: This study employed a mixed-methods design to examine the challenges associated with integrating GBV services into RH services in two crisis-prone regions of Indonesia. Qualitative data were collected through focus group discussions (FGDs) and in-depth interviews with key stakeholders, including community members, healthcare service providers, and representatives from the Provincial Health Office (Dinas Kesehatan) and the Women's Empowerment and Child Protection Agency (DP3A) at both district and provincial levels of the study area. These methods were utilized to explore stakeholder perspectives on the integration of GBV services within SRH programming. Quantitative data were gathered via a structured survey to assess community acceptance of the proposed integrated GBV-RH service model. Data analysis was guided by thematic analysis, with theoretical frameworks including the Social Ecological Model to examine multi-level influences on service integration and the WHO's Six Building Blocks of Health Systems to assess structural and operational dimensions of integration.
Results: The implementation of the GBV and SRH during disasters faces several key challenges, including: a) limited engagement and passive dependency of the local authorities on the issues, b) low participation and advocacy from grassroots organizations and community leaders, c) excessive workload constraints and inadequate communication capacity within the health sector, impeding effective service delivery and stakeholder coordination, c) limited community awareness and preparedness, d) Insufficient policy operationalization, e) Fiscal constraints, including inadequate budgetary allocations to support program scalability and sustainability.
Conclusion: A disaster preparedness program funded by local authorities is necessary to develop to enhance the integration of RH and GBV services for women and children during disasters.

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Impact of Climate Change on Pediatric and Vulnerable Populations During Disasters

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Summary: The impact of climate change on pediatric and vulnerable populations and the long-term implications that are not as highlighted in research. Though it will take years to deduce the impact on pediatric and vulnerable populations, this presentation will provide an overview of climate change hazards during disasters and discuss considerations for pediatric and vulnerable populations that clinicians can be aware of and consider as they pertain to disaster response.

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The Impact of Generational Trauma on Pediatric Patients

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Summary: The impact of generational trauma on pediatric patients is a cycle that gets passed on from generation to generation. This is particularly true for children who are brought up in war-torn countries, and their parents experienced the implications of war firsthand. The child may have unexpected reactions to harmful and dangerous situations happening around them, from walking alongside a building that had just been bombed without any outward reaction to their body shutting down and not being fazed by their environment. Children take on adult roles, which strips them of their childhood. This detachment is reflected in how they care and provide support to their children. This presentation will discuss ways to break the cycle of trauma and highlight the health implications associated with not doing so.

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Barriers in COVID-19 Oral Antivirals (OAVs) in Long Term Care Facilities: A Clinical Perspective to Inform Future Collaboration

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Introduction: An article published in JAMA in August 2023 highlighted a list of 15,438 nursing homes analyzed by the Center for Medicare and Medicaid Services (CMS). Of that total list, 5,705 were "never used facilities," which refers to nursing homes identified in a recent JAMA Network Research Letter * as not having oral antiviral or monoclonal antibody use.
Methods: During seven weeks from October 1 to November 17, 2023, a five-member team from HHS Coordination and Operations Response Element (H-CORE) Operations Technical Assistance (OpTA) Division – including three nurses, one science analyst, and one physician assistant – surveyed all 5,705 "never used facilities ". They gathered information on knowledge of the COVID-19 therapeutics Paxlovid and Lagevrio, accessibility in obtaining Paxlovid and Lagevrio from pharmacies or other entities, and hesitation from residents or providers/clinical staff in the use of Paxlovid and Lagevrio.
Results: Four primary barriers to accessing Paxlovid and Lagevrio were identified: (1) pharmacy distribution issues, (2) staffing issues, (3) corporate control setbacks, and (4) mis/disinformation among residents living in long-term care facilities. Four primary barriers to accessing Paxlovid and Lagevrio were identified: (1) pharmacy distribution issues, (2) staffing issues, (3) corporate control setbacks, and (4) mis/disinformation among residents living in long-term care facilities. Four primary barriers to accessing Paxlovid and Lagevrio were identified: (1)

pharmacy distribution issues, (2) staffing issues, (3) corporate control setbacks, and (4) mis/disinformation among residents living in long-term care facilities.
Conclusion: Supporting outreach initiatives by continuing collaboration with local/state health departments to vulnerable populations by disseminating specifically targeted information will help contribute to equitable access to care.

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#The Effectiveness of Intranasal Midazolam for Seizure Treatment in Emergency Care: A Systematic Review of Prehospital and Emergency Department

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Introduction: Seizures are a critical medical emergency requiring prompt intervention to improve patient outcomes and prevent complications. Intranasal (IN) midazolam has emerged as a promising treatment due to its ease of administration and rapid onset. However, there is a lack of comprehensive systematic reviews assessing its effectiveness, particularly in prehospital settings, compared to other treatments. This study aims to systematically evaluate and compare the effectiveness of intranasal midazolam in acute seizure management and patient outcomes in prehospital care and emergency departments.
Methods: A comprehensive search was conducted using the PICOS framework. This systematic review included clinical trials and observational studies published between August 2014 and August 2024 to review published data on intranasal midazolam used in prehospital and emergency departments. Data were extracted using Covidence and organized into summary tables for analysis.
Results: Three out of 489 studies included 5062 patients, all of them being under 18, and 4957 in prehospital settings. One clinical study trial and two cohort studies. The main indicator of medication success was seizure termination within ten minutes. One study reported that success rate of 88.2%. The second indicator was the reduction of seizure recurrence. Two studies noted the need for redosing with the intranasal route, with a risk difference of 11% and a 95% CI. Despite the higher frequency of redosing, intranasal midazolam showed comparable efficacy to other routes. Adverse effects, including respiratory depression and nasal irritation, were observed. Additionally, one study reported somnolence and vomiting.
Conclusion: The majority of the studies reported that intranasal midazolam might be an effective, safe, and easily applicable treatment for acute seizures in Adolescent and pediatric populations. However, it may require redosing compared to other routes. Additionally, further research is needed to refine its application and to validate and generalize the results.

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What Is the Prevalence of Post-Traumatic Stress Reaction After an Earthquake Disaster? Evidence From a Meta-Analysis of Worldwide Reports

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Introduction: Although there have been many case reports of earthquake disasters describing each prevalence rate (PR) of Post-Traumatic Stress Reaction (PTSR) in the disaster-stricken area, few meta-analytic studies have tried to integrate them for preparing for the next tragic disaster. As part of a study titled "Research on Strengthening DPAT Functions and Preparing for the Nankai Trough Earthquake," we reviewed and analyzed literature on PTSR following earthquake disasters worldwide. The study aims to evaluate the impacts of general earthquake disasters on the occurrence of PTSR and to estimate spatiotemporal PRs of PTSR in the affected area.
Methods: A systematic review is conducted by using four search engines, including Ichushi Web, PubMed, CiNii, and CINAHLin by the PRISMA guideline. We searched papers from 1970 to the present with the keywords "earthquake" OR "tsunami" AND "mental health" OR "psychiatry" OR "post-traumatic stress disorder" OR "depression" OR "psychological" OR "stress." This yielded a total of 2,930 articles. Including criteria is a research study written in English or Japanese reporting PR of PTSD or PTSR in the disaster-affected area.
Results: After excluding duplicates and studies that did not meet our criteria, we focused on 265 articles. Our review covers studies from various regions, with 109 from China, 50 from Japan, 18 from Italy, 16 from Indonesia, 15 from Turkey, and so on. Weighted averages of PRs integrated by periods after earthquakes were 29.0% in 3 months, 19.2% in one year, 18.8% in 3 years, and 20.2% in 10 years. The highest PR integrated by country or affected population was 60.9% in Turkey, and was 80% in the bereaved family for each. However, there were also significant research biases in some of these studies.
Conclusion: This study highlights the substantial psychological impact of earthquake disasters and supports the need for enhanced mental health response strategies.

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Overcoming Political Denial: Strengthening Global Public Health in the Face of Climate Change

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Introduction: Climate change presents an urgent challenge to global public health, exacerbated by political denial and fragmented global governance. This study examines the impact of climate change on public health and explores the barriers posed by political denial, emphasizing the need for a unified interdisciplinary approach to ensure sustainable solutions.
Methods: A comprehensive literature review was conducted, sourcing data from academic databases including PubMed, Web of Science, and Google Scholar. The review focused on studies addressing the intersection of climate change, political influences, and public health, with a thematic analysis used to synthesize findings. Key topics included the impact of extreme weather events on health, the role of political governance in global health strategies, and the effectiveness of existing public health frameworks.
Results: The analysis identified significant direct and indirect effects of climate change on public health, such as the increase in vector-borne diseases and mental health challenges due to extreme weather events. Political denial, particularly in autocratic regimes, was found to hinder international cooperation and the implementation of effective public health
policies. The study also highlighted the need for robust education and simulation activities, as well as the potential of collaborative frameworks like the Command-and-Control Safety Communication Assessment Triage Treatment Transport (CSCATTT) to address these challenges.
Conclusion: To effectively tackle the intertwined challenges of climate change and global health, a unified and interdisciplinary approach is essential. This includes overcoming political denial, enhancing global governance structures, and integrating environmental strategies with public health initiatives. The study advocates for the creation of a new global multidisciplinary entity to coordinate these efforts, ensuring a holistic and sustainable response to future global health crises.

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Trends in Online Search Behavior Related to Overdoses in Japan: An Analysis Using Infodemiological Methods

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Introduction: The demand for over-the-counter (OTC) drugs, particularly cold remedies, antitussives, and analgesics, has become indispensable in daily life. The easy accessibility of OTC drugs has led to their becoming a significant public health challenge, especially among the younger population. Notably, OTC drug abuse has increased significantly in recent years in Japan, where digital platforms have demonstrated a substantial influence on inappropriate medication use. This study investigates trends in online search behavior related to overdoses in Japan using infodemiological methods.
Methods: Monthly search volumes for specific queries were obtained from Yahoo! JAPAN, one of the predominant search engines in Japan. Data were sourced from the Yahoo! Japan DS INSIGHT server. We tracked the search volumes for the term "overdose" from 2020 to the most recent date. Additionally, we conducted analyses of sequential search patterns before and after overdose-related queries.
Results: Search volume data demonstrated annual increases for "overdose" queries were 89,800 in 2020, 158,000 in 2021, 245,000 in 2022, and 448,000 in 2023. Temporal analysis of search patterns in 2023 data, examining queries one week before and after searching for "overdose," revealed a notable increase in searches related to self-harm and suicide.
Conclusion: The findings demonstrate exponential growth in overdose-related online searches related to overdoses in Japan, particularly in recent years. These findings also indicate a potential link between increased interest in overdoses and concerns about self-harm and suicide. These results underscore the importance of surveillance of digital search behaviors in detecting emerging patterns of substance abuse and mental health issues. Further research is warranted to elucidate the underlying factors driving this increase and to develop evidence-based interventions for overdose prevention and mental health promotion.

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Online Interest in Evacuation Shelters in Japan: Infodemiology Study Using One of Japan's Most Frequently Used Search Engines

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Introduction: Evacuation shelters are essential temporary accommodations during disasters. However, concerns regarding shelter conditions, including safety and comfort, persist. Currently, the Internet is the most widely used source of information. This study aimed to investigate public interest in evacuation shelters in Japan by analyzing online search trends.
Methods: Monthly search volumes for search queries were obtained from Yahoo! JAPAN, one of the most frequently used search engines in Japan. The search volume data were obtained from the Yahoo! Japan DS INSIGHT server. We tracked the search volumes for "evacuation shelters" from 2020 to the most recent date, focusing on trends before and after the Noto Peninsula earthquake in January 2024. In addition, we analyzed search queries that included terms related to shelters to assess changes in interest.
Results: The estimated search volume for "evacuation shelters" was 600 in December 2023, which increased to 13,200 in February 2024. In January 2024, searches for sexual assault countermeasures in shelters showed the most significant increase, rising by 13,750% from December 2023 to 5,500. Similar search

terms were "shelter sexual harm examples" and "shelter sexual harm," with 5,100 and 2,100 searches, respectively.
Conclusion: The study findings suggest that public concern about safety in evacuation shelters has increased rapidly in the wake of the 2024 Noto Peninsula earthquake. Concerns about sexual assault were prominent, strongly suggesting a need for countermeasures. These results highlight the importance of strengthening measures to prevent sexual assault and providing information tailored to the needs of the population in the management of evacuation centers, which will contribute significantly to the realization of safer and more secure evacuation centers.

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A Japanese Way of Mental Support of Disaster Victims' Families: Development of Japan DMORT (Disaster Mortuary Operational Response Team) Association

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Summary: In 2005, a major train crash with 107 victims occurred in the Hyogo Prefecture. The victims' families reported not having been attended to by the medical community. In 2006, various medical professionals formed the Japanese Research Society for DMORT to discuss this problem. Victim family care was exclusively done by the police. DMORT approached the police to collaborate and develop a methodology for mental health support for the victims' families. Various activities were pursued: 11 closed seminars with victim families of various disasters, 30 training courses for disaster responders, frequent workshops in medical or nursing conferences, participation in local disaster drills, and mental health care manuals for relief workers.
Since 2009, DMORT has developed a relationship with the Hyogo prefectural police, but in several disasters in other prefectures in the early 2010s, the local police rejected DMORT's assistance. Furthermore, the 'research society' status confused disaster-affected people. In the 2016 Kumamoto Earthquake, upon the advice of the Hyogo police department, the Kumamoto police allowed DMORT to provide relief work for the families of 17 victims. This experience made the police recognize their limited care without medical knowledge, while DMORT recognized the necessity of legal qualification. In 2017, the Japan DMORT Association was established as a general incorporated association. After the reorganization, DMORT made official agreements with ten prefectural police departments and became official members of crime/disaster victims support liaison councils in several prefectures. Regarding disaster relief activities with police, DMORT conducted a 10-day operation to attend to three families in the Atami mudflow disaster in 2021 and an 11-day operation to attend to 126 families in the Noto Peninsula Earthquake in 2024. DMORT aims to provide mental support to disaster victims' families, in collaboration with the police, and to promote a DMORT mindset among disaster responders.

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EviMaPS: Evidence to Improve Mental Health and Psychosocial Support (MHPSS) Programs and Policies to Mitigate the Impacts of Disasters

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Introduction: The EviMaPS study aimed to identify the state of knowledge and practice on disaster mental health and psychosocial support (MHPSS) initiatives globally. This study was conducted through a collaboration between a multinational team of investigators and the World Health Organization (WHO).
Methods: Phase 1 consisted of a key informant survey to identify current and emerging MHPSS policies and programs to reduce mental health risks and enhance protective factors before and after disasters. Phase 2 consisted of a rapid literature review to identify empirical research on the impacts of disaster-related MHPSS initiatives. Programs identified in each stage were mapped against the MHPSS Minimum Services Package (MSP) Checklist, the Inter Agency Standing Committee (IASC) Intervention Pyramid, and the WHO Health Emergency and Disaster Risk Management Framework.
Results: Phase 1 elicited information about 92 programs and 9 policies in use between 2007 and 2024 across 19 countries and regions. Phase 2 elicited 33 primary research articles published between 2007 and 2024 across 13 countries and regions.
Conclusion: The field of disaster mental health is dynamic and evolving. This presentation will underscore the need for an ongoing commitment to recognizing developing practices and building evidence on mental health and psychosocial support initiatives in disaster settings. The implications of the present findings for leading agencies such as the WHO will also be presented, for example, concerning updating guidelines, frameworks, and setting priorities to address research gaps.

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Utilization of Physical Therapy in the Emergency Department: A Chance to Improve Care, Cost, and Outcomes

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Introduction: Emergency departments are expected to be readily available to provide care to the public at any time, but on an average day, the ability to receive patients can be stretched to capacity, attempting to meet the demands for services. Within the United States, the most common cause for older adults to be seen and treated in the ED is due to falls. After experiencing a fall, roughly 35% of older adults were discharged from the ED with

unrecognized but modifiable fall-risk factors. Provision of care from rehabilitation services at the right time and place has consistently presented challenges with barriers to access, including referral delays, scheduling delays, transportation, or additional costs. Ongoing staffing and labor pool shortages post-pandemic have further exacerbated the need for boarding of patients within the emergency department, resulting in avoidable complications such as delirium and hospital-acquired deconditioning that have shown worsening clinical outcomes for ill patients. Competing demands by providers and nursing staff in resource-constrained emergency departments make it necessary to task-shift provision of care to other services, including rehabilitation.

Methods: Information was obtained by clinical practice and academic literature review via Google Scholar and the use of the University of Colorado library search.

Results: Inclusion of a physical therapist within the emergency department has improved the opportunity for collaboration to reduce wait times for care and improved access to care. Patients and health systems have seen additional benefits with a reduction in costs associated with unnecessary hospital admissions, reduced use of narcotics for pain control, and a reduction in demands for imaging. The addition of regularly staffed PT in the ED allows for appropriate care by the appropriate provider in the emergency setting.

Conclusion: Staffing a PT within the ED is safe, financially feasible, and well-received by physicians and nursing colleagues.

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The Impact of Climate Change on Overlooked Populations

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Summary: This presentation aims to illuminate the unique challenges faced by older adults in the context of climate change and its compounding effects on health risks. Older individuals, particularly those with comorbidities, experience increased vulnerability due to environmental factors such as poor air quality, extreme weather events, and displacement from natural disasters. The presentation identifies specific health concerns, including:

1. Neurocognitive Impairments: Exposure to extreme heat exacerbates conditions like dementia and increases the risk of heat-related illnesses, especially in those with pre-existing cognitive impairments.
2. Metabolic Disorders: Climate-induced disruptions in medication access, such as delivery issues, contribute to elevated cortisol levels and exacerbated metabolic conditions.
3. Cardiovascular and Respiratory Issues: Poor air quality resulting from industrial pollution and wildfires leads to oxidative stress, adversely affecting cardiovascular and respiratory health.
4. Renal Health: Dehydration and electrolyte imbalances result from extreme temperatures and disrupted water supply, impacting kidney function.
5. Musculoskeletal Pain: Long-term temperature fluctuations and weather changes can lead to joint pain and mobility issues among older adults.
6. Psychosocial Effects: Disruptions to social networks during disasters increase feelings of isolation and vulnerability among older populations.
7. Immune System Compromise: The proliferation of waterborne pathogens poses a significant risk to older adults' immune health.
8. Integumentary Concerns: Natural disasters can increase exposure to flesh-eating bacteria and diseases such as Melioidosis.

By addressing these challenges, the presentation underscores the urgent need for targeted interventions and policies to support the health and well-being of older adults in the face of climate change.

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Longitudinal Study of the Psychological Impact of the July 2023 Akita Flooding: 3, 6, 9, and 12 Months After the Heavy Rain

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Introduction: Natural disasters affect mental health negatively. Compared to earthquakes, climate change often affects the people of a region repeatedly, but there is limited data on the impact of repeated disasters on mental health. In 3, 6, 9, and 12 months after the heavy rain, we conducted a web survey on the mental health of victims of the heavy rain disaster in Akita Prefecture, Japan.

Methods: To determine the psychological impact of the torrential rains in Akita Prefecture beginning in July 2023, the survey was administered 4 times: three months (October 13, 2023), six months (January 12, 2024), nine months (April 12, 2024), and one year (July 12, 2024) after the disaster. The municipalities where the participants lived were in the Akita Prefecture in Japan. Depression Anxiety Stress Scale (DASS) -21 and Impact of Event Scale Revised (IES-R) were used to evaluate psychological health.

Results: There were significant differences in the scores for depression, anxiety, and stress, as indicated by the DASS-21, at four points: 3, 6, 9, and 12 months after the disaster, as determined by the Kruskal-Wallis tests (depression: $p = 0.017$; anxiety: $p = 0.037$; stress: $p = 0.005$). There were significant differences in the scores for PTSD as indicated by the IES-R between 6,1,2, 9, and 12 months after the disaster, as determined by the Kruskal-Wallis test (6 months and 12 months, $p = 0.000$; 9 months and 12 months, stress, $p = 0.000$).

Conclusion: Heavy rain is unlike annual snowfall and low levels of sunshine, was found to have a significant impact on mental health immediately after the disaster. Akita Prefecture has a high suicide rate compared to the rest of Japan. In the event of a disaster in such an area, to provide rapid support is necessary to improve mental health.

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Factors Related to Fear of COVID-19: A Questionnaire-Based Analysis

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Introduction: Excessive fear during the COVID-19 pandemic has been linked to increased mental health issues, including depression and anxiety, the spread of misinformation, social panic, and discrimination. This study is a questionnaire-based analysis on factors related to the fear of COVID-19.
Methods: Approximately 20,000 participants from an internet survey panel were selected to reflect Japan's general population by age, gender, and residence. Surveys were conducted in October 2020 and January, April, July, and October 2021. Fear of COVID-19 was assessed using the Fear of COVID-19 Scale (FCV-19S), along with background information. High fear was defined as an FCV-19S score of 21 or above. After excluding invalid responses, 16,642 participants were included for the analysis. Multivariable logistic regression analysis was conducted with fear of COVID-19 as an outcome.
Results: Female gender, individuals in their 20s and 30s (compared to teens), hypertension, hyperlipidemia, reduced physical activity, recent symptoms of cough, sore throat, or fatigue, and decreased income were significantly associated with higher FCV-19S scores. Conversely, individuals in their 70s (compared to teens) and unmarried individuals (compared to those with spouses) showed a negative correlation. Additionally, a higher amount of savings correlated with lower fear levels.
Conclusion: Identifying individuals prone to heightened fear during crises like pandemics could enable timely interventions to improve mental health and reduce societal disruptions. This approach may also apply to other emergencies, such as earthquakes, tsunamis, or terrorist attacks.

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Surge in Tularemia Cases in Georgia, 2023: Epidemiological Trends

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Introduction: Tularemia is a zoonotic disease caused by the gram-negative bacteria Francisella tularensis. It manifests in several forms depending on the infection site. Mainly, these are ulceroglandular, glandular, and pneumonic types. Tularemia has a long history in Georgia, with monitoring efforts initiated after its first recorded case in 1946. Human outbreaks have been documented across various regions, with notable increases in cases over recent decades, emphasizing the importance of enhancing surveillance and preparedness efforts. In this study, we will review a sudden increase in tularemia cases in Georgia in 2023.
Methods: Tularemia is classified as an especially dangerous pathogen and requires immediate reporting. Data was extracted through the Electronic Integrated Disease Surveillance System (EIDSS). Probable tularemia cases were patients with compatible clinical manifestations and a positive micro-agglutination test (MAT).
Results: In the period of 2018-2022, 1 or 2 confirmed cases of tularemia were registered per year in EIDSS. However, in 2023, a total of 16 confirmed cases of tularemia were registered. Out of the total, 56.2% were male, and 43.8% - female. The mean age of the cases was 49 years. In 68.8% of cases, ulceloglandular, in 18.7% - glandular, and in 12.5% - pneumonic types were registered. All confirmed cases were registered in the eastern part of the country. The majority of cases were registered in the spring, summer, and autumn seasons (93.8%).
Conclusion: The sudden increase in tularemia cases in Georgia in 2023 underscores the need for heightened surveillance and response measures. With the majority of cases presenting as the ulceroglandular type and occurring in the eastern regions during warmer months, targeted interventions and public health initiatives are essential. This rise in cases, alongside tularemia's classification as a bioterrorism threat, emphasizes the importance of robust surveillance, timely diagnosis, and effective disease control strategies to mitigate future outbreaks.

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Projecting Disaster Emergency Medicine Through the Lens of Planetary Health: Illuminating a Transdisciplinary Path to Resilience in an Uncertain Future

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Summary: Disaster emergency medicine is uniquely positioned to evolve as the global landscape of risks grows increasingly complex and interconnected. Climate change, biodiversity loss, and environmental degradation are amplifying hazards, transforming them into disasters that transcend traditional boundaries. A Planetary Health framework provides an opportunity to reimagine disaster emergency medicine by connecting its practices with other sectors and addressing the systemic drivers of vulnerability and risk. The Planetary Health Alliance offers a powerful platform for generating insights and fostering interdisciplinary collaboration, emphasizing the links between human health and environmental systems. By leveraging this global network, disaster emergency medicine can adopt innovative approaches, including integrating nature-based solutions, ecological foresight, and cross-sector partnerships into disaster preparedness, response, and recovery. These efforts highlight the importance of aligning health and environmental systems to enhance resilience and mitigate cascading impacts.
Opportunities for innovation include using ecological data to predict disasters, embedding biodiversity preservation into risk management strategies, assigning economic value to nature, and designing recovery efforts that rebuild in harmony with natural systems. By incorporating insights from the Planetary Health Alliance, disaster emergency medicine can expand its reach, align with sustainability goals, and engage with a broader range of stakeholders. This projection highlights the transformative potential of Planetary Health to broaden the field of disaster

emergency medicine, fostering new partnerships across sectors such as public health, engineering, and urban planning. It will also challenge practitioners to look beyond immediate disaster response, envisioning a future where prevention, sustainability, and equity are central pillars of their work. As disaster emergency medicine professionals face an uncertain future, this lecture seeks to illuminate a path forward: one that embraces interdisciplinary approaches, addresses root causes of disaster vulnerability, and positions the field as a leader in building a safer, more resilient world.

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Long-Term Mental Health Trajectories After Great East Japan Earthquake: A Systematic Review

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Introduction: The Great East Japan Earthquake (GEJE) of 2011, compounded by the ensuing tsunami and Fukushima nuclear disaster, had profound impacts on the affected populations. While the immediate psychological consequences of the disaster have been well-documented, less is known about the long-term mental health trajectories of survivors. This systematic review aims to synthesize existing longitudinal studies to provide a comprehensive overview of long-term mental health outcomes following the GEJE in Japan.
Methods: This review was conducted following PRISMA guidelines. Using predefined inclusion criteria, a comprehensive search across PubMed, Web of Science, and APA PsycINFO was performed to identify studies assessing symptoms of PTSD, depression, and psychological distress among GEJE survivors with multi-wave follow-up data, with at least one time point being one year or longer post-exposure.
Results: A search conducted in July 2024 screened 1183 references and identified 24 longitudinal studies, spanning from seven months before to 140 months after the GEJE. The included studies varied in sample characteristics, measurement tools, cut-off criteria, and follow-up time points, making direct comparisons challenging. Across most studies, PTSD, depression, and distress showed an initial peak in symptoms following the disaster, which gradually declined over time. In some studies, PTSD symptoms appeared to start higher and show a sharper decline compared to depression or distress. Additionally, variations were observed among different subgroups, including junior high school children and long-term evacuees, who tended to exhibit higher or more sustained levels of mental health challenges.
Conclusion: The systematic review highlights that the GEJE has had enduring effects on survivors' mental health. While PTSD symptoms tend to decline significantly over time, symptoms of psychological distress and depression also decrease, albeit at a slower rate. Long-term mental health care should be provided, especially for vulnerable subgroups, to mitigate the disaster's lasting psychological impacts.

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Coping Strategies Between Professional and Community-Trained First Responders in Nepal

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Introduction: Coping strategies are essential for first responders in Nepal as they face disaster-related challenges. This study explores differences in coping mechanisms between professional and community-trained responders, aiming to assess the impact of formal training on their resilience and effectiveness in crises.
Methods: This was a cross-sectional survey conducted in Kathmandu, Nepal, from nationwide participants from various districts. Participants included 30 professionals and 30 community first responders. The COPE (Coping Orientation to Problem Experienced) tool, translated into Nepali, measured coping strategies over 15 domains. Data collection methods included paper-based, computer-based, mobile apps, or online surveys.
Results: A total of 60 first responders participated, with a mean age of 34.85 years; most were aged 21-30 (43.3%) and 31- 40 (26.67%). Community responders reported higher levels of religious coping (mean score 13.4), planning (14.4), and instrumental social support (13.3). In contrast, professional responders exhibited greater use of acceptance (11), denial (7.1), and mental disengagement (9.5). Both groups reported similar levels of venting (9.8).
Conclusion: The study reveals distinct coping strategies between professional and community-trained first responders, with professionals favoring acceptance and denial, and community responders preferring religious coping and planning. These findings suggest the need for tailored support, though generalizations should be approached cautiously due to potential bias and limited sample size.

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Long-term Mental Health Trajectories after Disasters and Pandemics

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Summary: The mental health consequences of health emergencies and disasters have the potential to be severe and sustained. Yet the long-term patterns of psychological response remain unclear. Effective planning and implementation of prevention, preparation, response, and recovery rely on understanding the trajectories for post-traumatic stress symptoms, depression, and anxiety prevalence in the years following disasters and pandemic exposure, and identifying associated risk and protective factors.

A systematic review of mental health literature identified trajectories of change for mental health concerns in the years following disaster exposure, differentiated by age and disaster type. Overall, mental health rates show a gradual improvement over time, but trajectories vary by disorder, age, and disaster type. Children and adolescents are at significantly heightened risk of mental health concerns after disasters, with elevated scores compared to adults, at every time point. A comprehensive range of multi-level risk and protective factors can determine potential areas for mental health support and disaster risk reduction strategies.

The chronicity of mental health outcomes after disasters and pandemics highlights a critical need for tailored, sustainable mental health services, particularly for children and adolescents. Innovative techniques in co-design offer an important opportunity for collaborative and informed community-level interventions that have the potential to address existing and emerging inequalities. Long-term mental health support and developing targeted strategies to enhance resilience among vulnerable groups in the aftermath of disasters and pandemics are critically important.

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The Roles of Primary Care in Disasters

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Summary: Primary care is the foundation of any health care system. Primary care providers offer public health and individual care for patients in all age groups and respond to acute and chronic health problems with medical and surgical interventions. The principles of primary care are versatile and applicable, and experience shows that primary care is essential in all phases of disasters. It plays a critical role, particularly in restoring affected healthcare systems. Primary care providers are trained to understand illness in the local context. They are flexible to balance limited resources for community and individual care, skills that become critical during a crisis. Proximity in disasters allows primary care to 1) protect families, 2) train local providers, and 3) empower people. These significant roles are hampered by a shortage of skilled primary care providers, both in general and when most needed: in response to a disaster. Even more concerning is the scarcity of competent primary care educators with the experience and skill to walk the walk, talk the talk, and grow the specialty.

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Needs for Primary Care Training in Post-Conflict Communities

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Summary: Primary care is the gateway to any healthcare system. Paradoxically, where the need is greatest – particularly in fragile states and conflict-affected communities – so, too, is the shortage. Providers serving in these circumstances face a wide range of clinical problems across various age groups, but with limited resources to draw upon. And there are precious few educators to prepare these practitioners for the daunting tasks they face. Drawing from primary care program development in diverse communities, this session will define primary care needs, identify primary care providers, address problems and challenges in training, examine assumptions that can hinder healthcare system building, and discuss how to implement and monitor sustainable interventions based on primary care principles.

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Longitudinal Patterns of Healthcare Workers' Mental Health during Western Australia's Unique Policy Response to COVID-19

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Summary: Western Australia implemented a swift and extensive response to the COVID-19 pandemic. Broad public health protections included strict international and state border closures, rapid lockdowns, and a widespread vaccination strategy that resulted in 95% of the population receiving two doses of the vaccine before the first community outbreak of the virus. This presentation investigates the longitudinal patterns of post-traumatic stress symptoms (PTSS), depression, and anxiety among healthcare workers in Western Australia, and the risk and protective factors associated with changes in status during the onset of COVID-19 community spread. It outlines data from an explanatory mixed methods study that included a longitudinal assessment of healthcare staff (n = 183) working at tertiary hospitals and major clinics across Perth (before and following the first wave), a follow-up state-wide survey (n = 815), and qualitative data from interviews and focus group discussions (n = 21). The quantitative data revealed moderate levels of mental health difficulties reported at baseline. At follow-up, overall rates of post-traumatic stress symptoms (PTSS), depression, and anxiety remained stable; however, latent growth models revealed that those with lower PTSS, depression, or anxiety symptoms at baseline reported a larger increase in symptoms over time, and those with higher symptoms at baseline had a smaller decline over time, indicating a 'catch up' effect. Key risk and protective factors will be presented, and implications for future pandemic preparedness will be outlined. Improvements in systemic workplace factors are needed to support healthcare workers' mental health during periods of acute stress, even in settings with high levels of emergency preparedness.

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Forced Convergence: Public Health Meets Disaster Medicine

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Summary: Disaster Medicine emerged from the modest roots of response and resuscitation. More recently, the focus has expanded to include preparedness, prevention, and recovery, pursued via the mechanisms of risk reduction, capacity building, and research. The scope has broadened from treatment to health, with a significant rise in the role of public health. Recent pandemics, global population growth, human migration and dislocation, urbanization, climate change, warfighting and conflict, and novel disease emergence have forced a convergence of disaster medicine and public health. More than ever, a trans-disciplinary approach to education, training, planning, and practice is indicated. Successful implementation around these complex challenges requires large-scale collaboration, trust, and meaningful engagement. It will also be driven by a renewed perspective, explored via a practical exercise. This is designed to bring together the capability, positions, data, and power that often sit in separate institutional boundaries.

Mass Gathering and Event Medicine

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MASS GATHERING AND EVENT MEDICINE

"Traslacion", the Feast of Black Nazarene in Manila, Philippines; a Gathering of Medical Volunteers and Medical First Responders.

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Summary: Traslacion is one of the biggest religious events in the Philippines. It involves a vigil and the procession of the carriage of the Black Nazarene in the streets of Manila, usually starting at the break of dawn and lasting for about 18 to 20 hours. This year, it is estimated that more than 10 million devotees flocked to the area during the event. Various risks and hazards are present. Compression asphyxia, heat exhaustion, and trauma cases are common. Traslacion is manned mainly by different rescue organizations that regularly volunteer to take care of medical services aside from the existing emergency medical services of the national and local government units. Thus, it is important to understand the preparation of medical volunteers and identify challenges and best practices during a mass gathering.

Planning and meetings started six months ahead. It involved multiple government agencies, church officials, and civil society organizations. Online lectures were utilized by the volunteers, and a simulation exercise was done with uniformed personnel for harmonization. An Incident Management Team was organized, and a Multi-Agency Command Center was set up. Advanced medical posts were situated strategically with different rescue and medical volunteers along the whole route of the procession. Strike teams were formed by the volunteers to extract patients from the thick crowd and bring them to different medical stations. There were 1,484 patients reported, and most suffered minor injuries. No major injuries or deaths were seen during Traslacion 2024 despite the number of devotees. Now, the challenge for the organizers is to keep future Traslacion safe. The volunteers have been the backbone of the medical response to this event in providing an early response. Despite the risks and hazards present in this event, early planning and preparation can make a difference in the outcome of this anticipated annual event.

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Mass Gatherings Medicine: What Is Yet to Know?

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Introduction: Mass gatherings medicine has been a rapidly evolving area of expertise for many years, with pearls and pitfalls emerging from more recent literature. Gaps have been identified: lack of a pragmatic definition, weaknesses in data sets used to report on major events, difficulties with developing tools to help organizers assess health, and safety issues, etc. This study aims to map and describe the current body of literature on mass gatherings in order to identify strengths and weaknesses, thus further guiding research in the field.

Methods: This study is a bibliometric review. Using the broad research terms "mass gatherings" and "major planned events," PubMed, Web of Science, and Google Scholar were searched for publications up to Sept. 14, 2024. No restrictions on language or type of articles were used. All grey literature was included. After removal of duplicates, two independent reviewers confirmed relevance, and articles were organized according to date of publication, region, type of event (7), main subject categories (11), and authorship, as well as strength of publication. Further analyses for co-citations and co-authorship, as well as timelines, have been conducted using VOSViewer (v.1.6.20).

Results: Initial database searches yielded 4526 results. After removal of duplicates and non-related articles, 898 publications remained and have been categorized, dating from 1978 to 2024. At the time of submission of this abstract, in-depth analysis of each category is underway to further regroup articles and identify gaps in knowledge. Co-citations and co-authorship analyses are also being conducted, yet results are not readily available.

Conclusion: Mass gatherings health and safety literature has grown rapidly over the past few years. This study identified areas of strong knowledge to build upon, while more scarce areas, like psychosocial aspects and quality evaluation, are still in need of significant development.

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Emergency Management and Public Safety Mass Gathering Preparation for a Total Solar Eclipse

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Introduction: Solar eclipses are often associated with mass gatherings along the path of totality. Understanding the effects of such events on emergency services is crucial for preparedness and resource allocation. This study aims to investigate preparations for and the impact of the April 8, 2024, total solar eclipse in two metropolitan areas: Indianapolis and Bloomington, Indiana, USA.

Methods: Organizations involved in emergency management and public safety were sent a questionnaire assessing their preparedness efforts as well as the expected and actual impact that the eclipse had on each organization. Data was collected and managed using REDCap electronic data capture tools hosted at Indiana University School of Medicine.

Results: Twenty-seven organizations were sent the questionnaire. Fifteen responses were obtained. Eight self-identified as hospital/healthcare, one as fire department, one as school/university, zero as federal or state government, one as local government, three as emergency medical services, zero as police, and one as other (emergency management/fire department) The median overall anticipated impact before the eclipse was three on a 1-5 Likert scale, with increased traffic being the most anticipated impact The median perceived impact after the eclipse was two (1-5 Likert scale), with increased population, traffic, and potential for mass casualties being the most impacted. Key themes extrapolated from the qualitative data include: communication and coordination between and within organizations is key to effective preparation and response; exercise planning for real-world events has intrinsic value beyond the actual event; overall impacts to hospitals were less than expected; overall preparedness efforts likely decreased any significant impacts.
Conclusion: Solar eclipses pose unique problems and require multi-agency coordination to prepare for large influxes of visitors. While impacts on emergency services may not be as profound as initially anticipated, active preparation for such events has intrinsic value and may mitigate negative consequences.

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Safeguarding Public Health at Mass Gatherings: A Risk Communication and Community Engagement Readiness and Response Toolkit to Enhance Health Emergency Management

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Introduction: Mass gatherings pose significant challenges in terms of public safety and health risks, requiring targeted and strategic risk communication and community engagement (RCCE) approaches. To effectively address these challenges, the World Health Organization (WHO) has developed an RCCE Readiness and Response Toolkit. This toolkit supports RCCE practitioners, decision-makers, and partners at all levels in planning and implementing readiness and response activities for health emergencies related to MG events. It complements existing frameworks and operational packages designed to assist event planners and stakeholders in organizing safe MG events and managing related health emergencies, and is based on global best practices.
Methods: This toolkit was developed through an iterative and consultative process that included an extensive literature review, expert consultations, pilot testing during outbreak responses, and peer reviews. It includes practical tools for risk assessment, community data collection, countering misinformation, and developing evidence-based RCCE strategies for emergency preparedness and response at mass gatherings.
Results: The toolkit equips MG organizers, stakeholders, and RCCE practitioners with the necessary tools and frameworks to effectively communicate risks and respond to health emergencies associated with MG events. By facilitating evidence-based RCCE strategies tailored to community needs, the toolkit supports more accountable health interventions, enhancing public safety and reducing morbidity and mortality at MG events
Conclusion: RCCE is essential for fostering collaboration and coordination, ensuring public trust and readiness, and suggesting effective community-led solutions to bolster health emergency response management before, during, and after a mass gathering. This publication provides a step-by-step guide on developing RCCE strategies tailored to specific settings, leveraging the latest evidence and community-centered approaches to protect and save lives.

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Enhancing Health Security at Mass Gatherings through Simulation Exercises and After Action Reviews

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Introduction: Simulation Exercises (SimEx) and After Action Reviews (AAR) are crucial tools for strengthening preparedness and response capabilities during emergencies. However, limited research has examined their application in mass gathering (MG) contexts. To address this, the World Health Organization (WHO) developed an MG practical guide for SimEx and AAR to enhance MG preparedness and readiness through structured evaluation.
Methods: A scoping literature review and consultations with MG experts identified best practices and challenges in planning and executing SimEx and AAR for MGs. This informed an operational guide to streamline methodologies and support effective SimEx and AAR implementation. By integrating insights from event experts, the guide addresses specific MG challenges such as crowd control, emergency medical response, and multi-agency communication.
Results: The research highlighted significant gaps in current methodologies, including a lack of clear objectives and tailored exercise designs for MG events. The guide addresses this by providing resources, including scenario templates for several health emergencies, such as crowd surges or outbreaks. These tools aim at improving stakeholder coordination, clarifying roles, and strengthening response mechanisms. Findings demonstrate that MG-focused SimEx and AAR resources enhance health security by identifying gaps, refining coordination, and ensuring readiness for real-world scenarios.
Conclusion: The WHO MG practical guide for SimEx and AAR fosters structured learning, documents lessons, and provides mitigation measures to improve health security at MGs. Emphasizing a proactive, risk-based approach, it helps organizers manage public health risks and ensure safety. Emphasizing a proactive, risk-based approach, it enables organizers to manage public health risks, ensure safety, and foster continuous learning and resilience, preparing countries and event organizers to address evolving public health challenges at future mass gatherings.

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Prehospital Health and Medical Planning for Multiple Simultaneous Large-Scale Events

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Summary: New Orleans hosts over 130 special events annually, with a few standing out as large-scale and nationally recognized, including two nationally ranked events, which are closely matched in success by the Special Event Assessment Rating (SEAR) system. The Super Bowl is a SEAR 1 event (the highest ranking of special event with national importance), and Mardi Gras is a SEAR 2 event within a week of one another. That is why New Orleans emergency medical services (NOEMS) started planning early. Planning for these events began a year in advance. It included, but was not limited to: regional EMS collaboration and coordination, training and education, event operation plans, and updating multiple inter- and intra-agency plans. Prehospital multi-event medical planning cannot be done in a silo; meetings included mutual aid EMS agencies, health departments, emergency management offices, and regional hospitals, among others. This prehospital coordination group met multiple times, leading up to the events. It worked on updating active shooter plans, Mass Casualty Incident (MCI) plans, MCI transportation plans, mass fatality plans, and family reunification plans. By meeting in the lead-up to these events, personnel can build relationships, allowing for greater ease of communication during the event or any incidents. Ideally, these plans and training will never be needed. For the small percentage of time when such plans need to be implemented, all the pre-event coordination can make a huge difference in response time and response effectiveness.

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Preparedness and Response at World Youth Day 2023 in Portugal - Challenges and Lessons Learned

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Summary: World Youth Day 2023, hosted in Lisbon, Portugal, likely represented one of the largest mass gatherings in the country's history, with an estimated 1.5 million attendees. The Ministry of Health established a comprehensive task force involving 17 institutions to coordinate public health preparedness and response efforts. Key initiatives included capacity building and scaling up essential services, such as food and water safety measures, legionella and vector surveillance, the issuance of temporary National Health Service (NHS) numbers to facilitate health care access, and the enhancement of IT systems for interoperability. Primary, pre-hospital, and hospital care services were expanded, with resources pre-deployed, including WHO-certified Emergency Medical Teams (EMT) and Primary Medical Aid (PMA) units.

The preparedness phase also faced challenges, including a lack of historical data from previous editions, unpredictable participant numbers, logistical complexities across multiple venues, and environmental concerns such as a potential heatwave. Surveillance was conducted using both indicator-based systems (SINAVE, eVM, SICO-VDM, INEM) and event-based tools (RONDA Bulletin, MediSys, mobile and meteorological data) for real-time situational awareness.

Communication strategies included the use of the SNS24 Helpline, a mobile app with health recommendations, and regular situation room briefings featuring real-time data dashboards. International cooperation with organizations like the ECDC and WHO bolstered these efforts. Key takeaways from the event emphasized the importance of data integration for evidence-based decision-making, a clearly defined organizational structure, thorough training programs, and a solid legal framework to support response activities. The conference underscored the legacy potential of these initiatives, aiming to improve public health emergency responses for future events of similar magnitude.

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Racing in Rising Global Temperatures: A Scoping Review of Heat-Related Illnesses in Endurance Running

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Introduction: As temperatures globally continue to rise due to climate change, sporting events such as marathons will take place on warmer days, increasing the risk of exertional heat stroke (EHS). This is especially pertinent to sports that draw a large number of amateur athletes, such as endurance running.

Methods: The medical librarian developed and executed comprehensive searches in Ovid MEDLINE, Ovid Embase, CINAHL, SPORTDiscus, Scopus, and Web of Science Core Collection on August 14, 2024. Relevant keywords were carefully selected. The remaining results underwent title, abstract, and full text screening in a web-based tool called Covidence. The included full texts were analyzed for pertinent data.

Results: A total of 3918 results were retrieved, and when all duplicates were removed, 1698 results remained. After title, abstract, and full text screening, 38 articles remained for inclusion. There were 22 case reports, 13 retrospective reviews, and 4 prospective observational studies. The races included half marathons, marathons, and other long distances. In the 22 case reports, only five articles examined more than a single patient encounter, and the mean environmental and patient temperatures were 21.0°C and 40.5°C, respectively. In the retrospective reviews, the mean environmental and patient temperatures were 19.8°C and 40.7°C. Discussion points emphasized that increasing environmental temperatures result in higher incidences of EHS.

Conclusion: With rising global temperatures from climate change, athletes are at higher risk of EHS. This scoping review reveals that younger, male patients are more often at risk, and early ice water immersion is the best treatment for EHS. Earlier race start times and cooling stations may mitigate incidences of EHS; however, data on event medicine preparation for hotter temperatures remains scarce. Future work needs to concentrate on universal reporting of illnesses in mass gathering events, as

well as the establishment of heat-related illness prevention and mitigation protocols.

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WHO Mass Gathering Medical Care Planning Model

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Introduction: Mass gatherings (MGs), such as religious pilgrimages, sporting events, and cultural festivals, present significant public health challenges. The large concentration of people in one location can place substantial strain on local healthcare systems. WHO's Medical Care Planning for Mass Gatherings guidance provides event organizers with a comprehensive framework to mitigate risks, ensure high-quality medical care, and alleviate pressure on local health services.
Methods: The development of this guidance was informed by a systematic review of the existing literature on mass gathering medical care and event health services (EHS). Additionally, a WHO Mass Gathering Workshop brought together public health experts, event organizers, and emergency medical teams (EMTs) to identify critical gaps in current planning standards. These insights were used to adapt the WHO EMT methodology specifically for mass gatherings, ensuring relevance to a variety of global contexts.
Results: The guidance outlines ten key domains essential for medical care planning at MGs, including clinical and operational capacity, human resource management, and mass casualty incident response. The team will describe the key concepts underpinning these domains and the areas covered by the guidance. Standards for EHS-EMTs were established to address these needs. The framework also offers practical recommendations on surge capacity, staffing, transport logistics, and patient referral systems, aimed at enhancing preparedness and response capabilities.
Conclusion: The WHO guidance addresses a critical gap in global standards for health services at mass gatherings. It offers practical, adaptable solutions that enable event organizers and host countries to enhance health outcomes, improve safety, and ensure a coordinated medical response. By following this framework, future mass gatherings can be managed with greater efficiency, reducing risks to public health.

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Establishment and Validation of an Emergency Medical System in Soccer Stadiums

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Summary: Emergency medical care systems are essential for mass gathering events held in large stadiums. In May 2022, Nippon Sport Science University agreed with the Japan Professional Football League's Yokohama F. Marinos to provide first aid for spectators at soccer stadiums. This first-aid system was developed mainly by paramedics, with the participation of paramedic students. In this study, we analyzed the occurrence of injuries and weather conditions across 51 games from May 2022 to September 2024. We specifically examined the patient presentation rate (PPR) and the transport to hospital rate (TTHR). We also explored the correlation between temperature, WBGT (Wet Bulb Globe Temperature), and PPR. The average annual attendance was 26,903 (±12,220). The PPR was 0.15 (±0.20), and the TTHR was 0.02 (±0.04). There were 4.69 (±5.75) injuries per game, with 88.4% of cases not requiring medical attention. However, injuries were significantly more frequent during the summer months. The incidence of patients in soccer stadiums showed a weak positive correlation with the number of attendees (r = 0.430) and a stronger positive correlation with higher temperatures (r = 0.537) and WBGT (r = 0.517). Similar trends have been reported in other countries regarding the association between PPR and temperature, and this study confirmed the same pattern. Although no cases of cardiac arrest occurred, the early intervention rescue system effectively prevented patients from becoming seriously ill. Further research is needed to develop prevention strategies, especially for heat stroke during the summer season.

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Use of Handheld Ultrasound Systems at the Medical Service of a Music Festival in Germany – 5:20 - Five Minutes for Twenty Percent

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Introduction: The widespread availability of handheld point-of-care ultrasound systems (HHUS) has rapidly increased the number of preclinical emergency medicine ultrasound examinations in Germany. HHUS used by emergency physicians at the Southside Festival (SSF) in southern Germany was evaluated over several years according to its feasibility and ability to change patients' disposition and treatment process.
Methods: By questionnaire, the doctors performing the examination were asked about the indication, the body region examined, the ultrasound protocol used, if any, the duration of the examination, and any changes in the further procedure. In addition, the subjective assessment of the accessibility, the visualization under the existing lighting, and the ultrasound experience of the users were surveyed.
Results: In three years, a total of 29 ultrasound examinations were assessed by the sonographers. The majority of examined regions were the abdomen (55.2%). 27.6% used the (e)FAST protocol; no protocol was used in 41.4%. Indications: 31.0% pain, 20.7% trauma, 27.6% examiner's interest, 24.1%

confirmation of suspected diagnosis, 3.4% as part of CPR. Duration: examination 41.4% <2 min, 41.4% 2-5 min. In 20.7%, the procedure was changed due to the examination. Accessibility and visualization were rated 2 (1 very good - 6 poor). Half of the users considered themselves experienced.
Conclusion: Ultrasound examinations under medical service conditions at an MGE were feasible and accessible. The majority of examinations concerned the abdomen. US protocols were only used in half of the cases. The duration of the examination was usually less than 5 minutes, and the procedure was changed further by the examination in 20.6% of cases. Since there is supposed to be a large amount of extremities trauma in festival visitors, this percentage might be even higher when (in fracture and joint ultrasound) trained emergency physicians are in charge. Data collection will continue.

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Mazu Pilgrimages in Taiwan: The Epidemiology of a Moving Mass Gathering Religious Event with Long Distance and Duration

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Introduction: Medical and disaster-related incidents associated with mass gatherings are increasingly recognized as important issues. Understanding the nature of these gatherings and implementing thorough disaster preparedness and well-planned response strategies are essential for mitigating potential impacts. Taiwan's Mazu pilgrimage is one of the largest mass gatherings worldwide, involving rituals and processions spanning over 300 kilometers in 8 to 10 days. Few studies have examined the health impacts and influencing factors associated with such prolonged and long-distance pilgrimage movements. This study aims to assess the health impacts and associated factors of these events to inform future preparedness and response planning.
Methods: We conducted a retrospective observational study of patients visiting the emergency department during the Mazu pilgrimage from 2018 to 2024, utilizing data from the Emergency Medical Resources Management System (EMRM), Ministry of Health and Welfare. The dataset includes variables such as date of emergency visit, gender, age, primary diagnosis, mode of transportation to the emergency department, triage level, and medical interventions. The primary outcome measured was the frequency of emergency department visits.
Results: A total of 1,637 patients visited the ED during the Mazu pilgrimages from 2018 to 2024. The mean age of all patients was 49.1 years, with 813 (49.7%) being male. Among these patients, 819 (50.0%) were transported to the ED by ambulance, and 177 (10.8%) were triaged as TTAS level I or II. Regarding patient disposition, 1,469 patients (89.7%) were discharged without admission, and 132 (8.1%) were admitted to the general ward.
Conclusion: For the Mazu pilgrimages in Taiwan, most patients visiting the ED presented with mild cases. Furthermore, the health impacts extended beyond EDs to the emergency medical service (EMS), which had to respond to the increased demand for ambulance transportation. Therefore, it is critical to effectively manage both prehospital EMS and emergency services in EDs to bridge potential treatment gaps.

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Mass Gathering: Indianapolis, Indiana 2024 Eclipse

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Introduction: An estimated one million people traveled to the state of Indiana to view the April 8, 2024, total solar eclipse, with over 125,000 of them coming to the city of Indianapolis. This study seeks to evaluate the impact of this large mass gathering on Fire and Emergency Medical Services call volume and response times, as well as interhospital transfer volume.
Methods: Call volumes and response times for the Indianapolis Fire Department (IFD) were analyzed for the following date ranges (all 2024): 3/29-4/4, 4/5-4/11, and 4/12-4/18. Indianapolis Emergency Medical Services (IEMS) call volumes and response times, as well as interhospital transfer (IHT) volume for Indiana University-affiliated hospitals (Indianapolis region) were analyzed for the following date ranges (all 2024): 3/5-4/4, 4/5-4/11, and 4/12-5/10.
Results: IFD total call volume, average daily call volume, and mean response times: for 3/29-4/4: 1074 (153.4), 0:04:16 (urban); 323 (46.1), 0:05:15 (rural.) For 4/5-4/11: 1062 (151.7), 0:04:11 (urban); 334 (47.7), 0:05:31 (rural.) For 4/12-4/18: 1193 (170.4), 0:04:08 (urban); 368 (52.6), 0:04:58 (rural.) IEMS total call volumes, average daily volume, and mean response times: for 3/5-4/4: 11706 (377.6), 0:08:25. For 4/5-4/11: 2763 (394.7), 0:08:38. For 4/12-5/10: 11899 (410.3), 0:08:17. IHT total volume and daily average volume: For 3/5-4/4: 2632 (84.9) For 4/5- 4/11: 567 (81) For 4/12-5/10: 2537 (87.5).
Conclusion: There was minimal variation in response times for either IFD or IEMS during the week of the eclipse compared to the surrounding time frames. There was minimal variation in call volume for IFD, IEMS, and HTV during similar weeks. This could be due to multiple factors, including minimal impact of the mass gathering on emergency medical services or transfers, the large geographic area of the mass gathering, adequate anticipatory preparation, the peaceful nature of the gathering, or other undetermined variables.

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A Research on Concepts and Terminology on Crowd Crush: Minimizing Confusion and Creating a Basis for International Standards

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Introduction: Crowd crush is a type of disaster that continues to occur around the world, and some of these disasters have a devastating impact on society. Despite the high number of human casualties, there is no single solution, which is why a multidisciplinary approach is required rather than a single solution. Therefore, it is necessary to apply a scientific academic approach to understand crowd crush, but there is confusion on the terms and definitions underlying it. In this study, we aimed to derive appropriate conceptual definitions and terminology for crowd crush through a survey of experts.
Methods: Experts were selected by discipline to conduct the expert survey. The experts were selected from the fields of safety and security management, engineering, medicine and health, sociology, and psychology, and a total of 25 experts were selected for in-depth interviews. The experts were selected based on their research, teaching, and consulting activities related to crowd crush, and only those with relevant interests and knowledge were included through preliminary interviews.
Results: In some cases, experts expressed the same concept in different terms, and this was more pronounced when the experts came from different disciplines. This is likely due to applying the terminology used in their academic fields to crowd crush, which can be confusing if different terms are used. While most of the concepts and definitions were consistent, some terms needed to be reorganized to fit the context of crowd crush.
Conclusion: There is some confusion about the concepts and terminology of crowd crush, even among experts. So a committee is needed to further clarify the concepts and terminology in order to develop standards of prevention, preparedness, and response in the crowd crush situation.
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Patient Transports and Distribution in a Crowd Crush Disaster: The Case of Itaewon Halloween Festival, South Korea. Which is More Important: Early Access or Appropriate Treatment?

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Introduction: On October 29, 2022, crowds gathered for a spontaneous Halloween event at the Itaewon area of Seoul, South Korea, resulting in a crowd crush disaster. In this study, the authors investigated the process of patient transportation and dispersal from call to hospital treatment and examined the medical characteristics of crowd disasters.
Methods: Researchers analyzed the data of firefighter-paramedic transports of patients due to crowd crush during the Itaewon tragedy in 2022 based on the official input data of transports. Data from 310 patient transports were collected, excluding ambulance requests from hospitals or morgues that were not from the accident scene. The time taken for each stage of transport and transport distance were analyzed. Patients' initial triage outcomes, initial medical characteristics, and clinical triage outcomes were also analyzed.
Results: High fatalities relative to the number of injuries were found. A sudden increase in transport demand led to a temporary shortage of ambulances. The time for ambulance dispatch and access to patients was the longest. Even when paramedics arrived at the scene, the start time from arrival at the scene to patient care by paramedics was characterized by an increase due to the nature of crowd incidents, where dense crowds make it difficult to access patients. While there may not be many cases of visible trauma on the scene, stampedes are fundamentally a traumatic medical condition, and there may be many traumatic injuries that are not revealed until final diagnosis and autopsy.
Conclusion: Issues of access to patients and high mortality are unique to crowd crush disasters, and further research should continue.

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Epidemic Surveillance at a Psytrance Festival in Portugal - An Example to Set the Standard

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Summary: The National Health Institute Ricardo Jorge (INSA), in collaboration with the Local Health Unit of Castelo Branco (ULSCB) and local authorities, implemented comprehensive epidemiological surveillance during the BOOM Festival 2023, held from July 20-27 in Idanha-a-Nova, Portugal. This multidisciplinary psytrance festival, attracting around 40,000 attendees from 169 countries, presented unique public health challenges due to high interpersonal contact, diverse international attendance, and temporary accommodation facilities that increase the risk of infectious disease transmission, injuries, and substance-related incidents.

The primary goal of this collaboration was the early detection and timely response to health risks. Real-time health monitoring was conducted using data collected from the "Boom Medical Service" field hospital, the Kosmicare facility (dedicated to psychological care), and ULSCB (Local Health Unit of Castelo Branco) units, including the Idanha-a-Nova Health Center and Hospital Amato Lusitano. A daily report compiled health data, analyzed trends, and identified emerging risks, which was then shared in briefings with key stakeholders, including civil protection, law enforcement, and festival organizers.

The epidemiological team comprised 17 members, including public health physicians, general practitioners, EUPHEM program microbiologists, and medical students. Key observations included a notable increase in gastrointestinal complaints,

prompting further investigation into potential exposures. Surveillance data revealed various health issues, such as wound care (33.1%), altered consciousness (10.7%), musculoskeletal complaints (12.4%), ENT problems (7.7%), and gastrointestinal issues (6.0%).

The festival setting demonstrated the importance of real-time surveillance, integrated health responses, and multidisciplinary collaboration to safeguard public health at mass gatherings. These measures emphasize the need for adaptable strategies and ongoing evaluation to optimize health interventions in similar high-risk environments. This experience also highlights the role of public health in mitigating risks while promoting safer, enjoyable events.

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Evaluating Inter-Rater Consistency in a New Four-Question Triage Tool for Mass Gathering Events

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Introduction: Effective triage at mass gatherings is essential for optimal resource allocation and timely medical care. Unlike disaster or hospital settings, mass gatherings present unique challenges. The primary objectives of triage at such events are to identify and prioritize life-threatening conditions, recognize cases exceeding available care levels, and minimize disruptions for both patients and the event itself. This study introduces a novel decision-support tool for triaging patients at mass gatherings, directing them to either a "Medical Zone" or a "First Aid Zone" based on non-vital sign criteria. The tool employs four straightforward questions to facilitate rapid triage. The inter-rater consistency was assessed to determine the tool's reliability.
Methods: Thirty-one responders with experience in event-based care assessed 46 written patient vignettes, assigning each patient to either the Medical Zone or First Aid Zone based on four binary questions: 1) Is the patient unable to walk calmly and independently? 2) Is the patient communicating in a distressed manner? 3) Does the patient have cardiac or respiratory complaints? 4) Does the patient give a worrying impression? Responders included event first responders, emergency medical technicians, nurses, and physicians, all of whom received standardized instructions on the tool's usage.
Results: The overall inter-rater agreement for triage decisions, measured by Fleiss' Kappa (0.64, $P < 0.001$), demonstrated substantial consistency among responders. This suggests that the tool can consistently guide responders in assigning patients to the appropriate care zones, thereby supporting efficient resource allocation in the field.
Conclusion: This four-question triage tool demonstrates substantial inter-rater reliability, showing promise as a reliable and efficient method for triaging patients at mass gatherings. Future studies should evaluate its effectiveness in live field conditions to validate its practical impact on the triage process during large-scale events.

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Healthcare and Public Health at Rock in Rio Lisboa 2024 - a Scalable Solution for Mass Gatherings

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Summary: Rock in Rio Lisboa, a prominent four-day music festival in Portugal, attracts over 160,000 attendees each weekend across two weekends. To safeguard public health and ensure medical readiness for such a large-scale event, comprehensive strategies were developed. These strategies required close coordination among emergency services, festival organizers, healthcare providers, and public health authorities to address challenges stemming from high-density crowds, extended event hours, fluctuating weather conditions, and the potential for public health hazards.

A multi-tiered healthcare infrastructure was established on-site, which included a fully equipped medical center, advanced life support modules, and strategically positioned mobile response teams to provide immediate care. A strong focus was also placed on mental health support, with professionals trained in psychological first aid available to manage anxiety, stress, and other crowd-induced psychological concerns. Additionally, preventive measures such as hydration stations and effective crowd management were implemented to reduce the risk of serious health incidents.

Public health teams, consisting of public health physicians, regulatory authorities, and environmental health officers, enforced stringent food and water safety measures. Daily water quality assessments were conducted, and strict audits were performed on the 79 food and beverage vendors to ensure compliance with safety regulations, thereby preventing outbreaks of foodborne and waterborne illnesses. Medical teams provided care to 1,644 individuals during the event, addressing issues such as dehydration, minor injuries, and heat-related illnesses, with fewer than 1% of cases requiring transportation to external healthcare facilities.

This report illustrates the efficacy of proactive, multidisciplinary planning in managing health risks at large gatherings. The strategies employed at Rock in Rio demonstrate a scalable model for future events that prioritizes attendee well-being and resilience, showcasing how well-coordinated public health and medical interventions can minimize the impact of health crises in mass gatherings.

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What Core Competencies are Necessary to Train Mass Gathering Medical Staff? An International Delphi Study for Expert Consensus

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Introduction: Mass Gathering Medicine is a relatively new subspecialty. Focusing on improving the health impact and mitigating issues is a newly recognized skill. Given the heterogeneity of MGM, including sporting, festivals, and religious gatherings, standards can be challenging to institute. With vast types of MGM staffing, medical skills can vary. Current literature needs more research and guidance on training standards for event medical staff. This study highlights expert opinion on minimum standards for medical staff to improve public and participant safety.
Methods: The study is a three-round Delphi based on the CREDES criteria. Experts were identified at the MGM conferences in Riyadh and NYC in 2023. The study was performed via STAT59. Emails were sent to the experts requesting participation. In round 1, experts generated opinions on medical staff training. The second and third rounds used a 7-point linear scale to rank each statement. The ranking consisted of "not at all important" to "extremely important". Stat59 anonymized all statements and rankings. The statements were considered to have reached a consensus if the responses had a standard deviation (SD) of less than or equal to 1.0.
Results: 137 open-ended statements were generated in round 1, and 73 appropriate statements proceeded to round 2. 28.7% of the statements (21/73) found consensus after round 2. In round 3, 39.6% of the remaining statements reached consensus (21/53). Forty-two statements from the initial 73 (57.5%) met consensus. Certain priority themes were noted. This included venue-specific information, good staff orientation to operations and capabilities, and community coordination. Mass-casualty preparation and triage were secondarily highlighted as a critical focus.
Conclusion: MG events continue to increase in size and frequency. This expert consensus provides a framework for training. Further work is needed to specialize core competency expectations for specific events and venues.

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Operationalizing Event-Based Surveillance During Mass Gatherings: The WHO Experience and Outcome of Using Public Health Intelligence to Detect and Monitor Potential Hazards During the Paris 2024 Olympics and Paralympic Games

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Introduction: In the context of mass gatherings, event-based surveillance (EBS) plays a critical role in detecting public health threats in the host country, the home countries of attendees, and neighboring nations. During the Paris 2024 Olympics and Paralympic Games, the World Health Organization Health Emergency Program conducted tailored public health intelligence activities, including enhanced EBS, to monitor potential health risks related to the event.
Methods: Using an all-hazards approach, priority diseases and hazards were identified based on WHO's EBS activities for previous mass gathering events, the French government's priority disease list, and hazards flagged by WHO as relevant in the European Region. EBS covering domestic and global health signals was conducted using the Epidemic Intelligence from Open Sources (EIOS) platform, a leading initiative for open-source intelligence. This surveillance effort spanned from two weeks before the Olympics to two weeks after the Paralympics, covering 24 hours. Signals were triaged and assessed for their public health impact and potential risk to the Games. The risk assessment outcomes were shared daily with the French government and key stakeholders.
Results: Between July 12 and September 20, 2024, a total of 42,870 raw signals were scanned and triangulated, with 49 (0.1%) signals assessed and triaged for potential public health risks. Of these, 16 were further assessed to have a potential impact on the Games, with respiratory diseases, particularly COVID-19, accounting for 44% (n = 7), followed by soil- and water-borne diseases (25%, n = 4).
Conclusion: While several signals with potential public health impact on the Games were flagged, none were assessed as requiring notification through the International Health Regulations (2005) mechanism. The integration of tailored EBS into mass gatherings is crucial for identifying hazards, assessing risks, implementing precautionary measures, and supporting decision-making, all of which are key to making events safer for public health.

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Quality of Care and Challenges in Medical Convoy Transfers During Hajj Season 2023: A Cross-Sectional Study

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Introduction: The Hajj pilgrimage, a significant spiritual journey for Muslims, occurs annually in Mecca, Saudi Arabia, attracting millions of participants from diverse backgrounds worldwide. This surge in pilgrims poses substantial challenges for healthcare services, as many face health risks due to physical

exertion, dehydration, and exposure to infectious diseases. The unique healthcare demands during Hajj necessitate a thorough understanding of the quality of care provided and the challenges faced by medical convoys.

Methods: This observational retrospective cross-sectional study involved 295 patients transferred from Makkah and Madinah hospitals to Arafat via a specialized medical convoy service during the 2023 Hajj season. Data were collected from electronic patient data sheets, documenting demographic characteristics, comorbidities, diagnoses, transfer details, and the Risk Score for Transported Patients (RSTP).

Results: Among the 295 patients, the majority were males with an average age of 63.16 years. The most common nationalities were Asian (48.1%) and African (28.5%). Significant comorbidities included hypertension (34.2%) and diabetes mellitus (33.2%). RSTP indicated that 96.6% of patients had scores below 6. Nearly half were discharged within 72 hours post-transfer, while a small percentage experienced deterioration or mortality. Most patients (58.3%) did not receive any medications or anesthesia, although 31.2% were administered analgesics. Common diagnoses included fractures (15.3%) and heat stroke (10.5%). Univariate logistic regression analysis revealed significant associations between higher RSTP and factors such as older age, presence of arrhythmias, need for respiratory support, lower Glasgow Coma Scale scores, total score, and blood pressure.

Conclusion: This study highlights the diverse demographics and significant comorbidities of patients transferred during Hajj, indicating the need for tailored healthcare strategies. The strong association between higher RSTP scores and factors such as age and arrhythmias underscores the importance of enhanced monitoring during transport. It is crucial to develop protocols that ensure patient safety and optimize outcomes in future healthcare delivery during Hajj.

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Integrated Realistic Multiscenario Drill for Bioemergency Preparedness: Enhancing Response Capabilities of the Olympic Hospital Complex for the 2026 Milano-Cortina Winter Olympics

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Summary: The 2026 Milano-Cortina Winter Olympics pose unique challenges for disaster medicine preparedness, particularly in managing bioemergencies within alpine regions. This study describes a comprehensive multiscenario drill designed to evaluate and enhance the command and control capabilities of the Olympic hospital complex in responding to potential infectious disease outbreaks and biothreats, utilizing existing resources.

The drill encompassed three integrated components: 1. Command and Control Role-Playing Exercises: structured role-playing sessions were prepared to simulate decision-making processes during bioemergency scenarios; 2. Virtual Simulation: Advanced virtual reality platforms were employed to create immersive bioemergency scenarios, allowing participants to engage in realistic simulations of outbreak management; 3. Field Exercise: A practical field exercise was conducted within the Olympic hospital complex, simulating a sudden influx of patients presenting with symptoms of a contagious disease. This exercise tested the hospitals' surge capacity, patient triage procedures, isolation protocols, and the practical application of command-and-control strategies in a real-world setting.

Data collection methods included real-time observations, debriefing sessions, and participant feedback surveys, focusing on response times, decision-making efficacy, and inter-agency coordination. The integrated drill revealed several key findings, including the importance of e-role-playing exercises to enhance command hierarchies and improve inter-agency communication. Virtual simulations and field exercises were used to test the hospitals' preparedness and response.

This multiscenario drill effectively integrated role-playing, virtual simulation, and practical field exercises to assess and enhance the bioemergency preparedness of the Olympic hospital complex. The findings underscore the importance of comprehensive training approaches that combine theoretical knowledge with practical application, tailored to the unique challenges of mountain healthcare settings. Implementing the lessons learned will strengthen the region's capacity to respond to bioemergencies during the Milano-Cortina Winter Olympics and serve as a model for similar alpine regions globally.

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Public Health and the 2024 Summer Games - Lessons Learned

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Summary: In preparation for the Paris 2024 Summer Games, the French national public health Agency anticipated increased environmental and infectious risks, including heat waves, arboviruses, measles, and foodborne outbreaks, as well as tension on drug stocks. Strengthening the capacity to detect, alert, and adapt preventive actions was essential to ensure a timely response to health emergencies. Since the Games, the Agency is conducting an after-action review to learn from the experience for future mass gatherings.

The Agency put in place a specific health surveillance protocol for the Games from July 8 to September 15, 2024. The Agency provided daily and weekly reports to health authorities, along with risk analysis based on epidemiological criteria, in the event of a health incident. Though relying on existing syndromic and specific surveillance, the Agency seized the opportunity to develop new field surveillance systems in collaboration with first aid responders. This enriches the knowledge on mass gatherings and strengthens the Agency's line of conduct and responsiveness for future events. The Agency identified key prevention messages for travelers and Games spectators by collaborating with French health authorities, international entities, and the Games organizer. This led the Agency to adjust its internal organization during the Games while continuing to pursue its ongoing missions.

Although there were no major health alerts during the Olympic Games, the sanitary surveillance of this event should leave a useful legacy: knowledge of relevant indicators or systems for early detection of signals during a mass gathering, providing timely reassurance to health authorities to contribute to preventive or control measures, and fluid communication between public and Olympic stakeholders.

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A Ragdoll Physics Simulation for Analyzing Human Crowd Crush Dynamics

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Introduction: Human crowd crushes are catastrophic events where dense gatherings can lead to severe injuries and fatalities. Understanding crowd behavior and biomechanics is crucial for developing effective prevention strategies, such as eliminating bottlenecks and ensuring ingress and egress. Given the infeasibility of real-world trials, simulations are useful to examine crowd disasters. This study reports the results of a simulation that analyzes human behavior and injury patterns during a crowd crush by incorporating variable crowd densities and trajectories using ragdoll physics principles.
Methods: This simulation was developed with ragdoll physics using the Unity Simulation Engine (Unity Technologies, 2023, San Francisco, USA). A custom-built virtual environment modeled a crowd crush incident and included three groups, each consisting of 500 individuals, converging from the left, right, and perpendicularly in a "T" junction. Pedestrians walking at speeds averaging 1 meter per second were randomly assigned. A series of 30 simulation trials was run with 1,500 pedestrians per trial. The number of injuries and fatalities was recorded.
Results: A crowd simulator was successfully generated, allowing users to create groups with specific sizes, routes, and speeds, with visualization of humanoid subjects. The mean number of injuries was 191.6 (±18.75 SD), with a median of 191.5 injuries per trial and an interquartile range (IQR) of 182 to 206.5 injuries. For fatalities, the mean was 63.1 (±8.56 SD), with a median of 62 fatalities per trial and an IQR of 55.25 to 68.75 fatalities.
Conclusion: The ragdoll physics simulation provides valuable insights into biomechanics, injuries, and fatalities associated with human crowd crushes. This tool has the potential to help improve crowd management protocols. Future research will focus on refining the model and its application in real-time crowd monitoring systems.

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Toxicologic Cardiac Arrests at Music Festivals: Is It Time for a Tailored "One T" Approach to Management?

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Introduction: In undifferentiated cardiac arrest, the "5Hs and 5Ts" approach has been the cornerstone guiding advanced care and management. In recent years, however, more streamlined and targeted approaches have been posited for specific subsets of arrests where a single H or T is likely to be the cause. Specific Hs and Ts — for example, traumatic arrest, drowning (hypoxia), and hypothermia, to name just a few — have each enjoyed tailored approaches and algorithms that inform the sequence and dictate care to focus on high-yield diagnostics and interventions that are context-specific and depart somewhat from standard ACLS algorithms.
Methods: This systematic review examines the potential for developing a focused algorithm for recreational toxicologic arrests at music festivals.
Results: The evidence supporting specific interventions (e.g., airway support, antidotes, deviation from standard ACLS medications) is reviewed, and the primary considerations (toxidrome, substances used, presenting rhythm, etc) affecting decision-making are summarized for the tailored management of cardiac arrest related to recreational substance use at music festivals.
Conclusion: Cardiac arrests at music festivals would benefit from a tailored approach to high-yield management, medications, and interventions based on substances ingested, presenting toxidrome, and presenting cardiac rhythm. There is a need for further research on this subject to bolster the evidence for deviation from standard Advanced Cardiac Life Support (ACLS) practices, as a tailored toxicological approach would likely confer significant benefits to patient outcomes.

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Interdependence of Public Safety Services at a Music Festival - Medical and Sanctuary

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Summary: Harm reduction services are becoming increasingly prevalent at music festivals, aiming to support the health and safety of attendees. Sanctuary zones — also known as psychedelic crisis, chill, or trip sitting spaces — allow care for select cases provided by skilled peer providers. To date, the benefits of and for medical and sanctuary services, working synergistically, and the benefits to attendees have not been explored.

A retrospective chart review of the 2024 edition of a 25,000-person multi-day music festival was performed. All medical or sanctuary visits involving both services in some capacity (e.g., combined field response, inter-service consultation, discharge disposition, patient transfer) were included. De-identified data were extracted, including reason for presentation, timing, and reason for shared care, presentation acuity, treatment given, and length of stay.

There were 2,625 and 2,201 encounters at the medical and sanctuary facilities, respectively, with 621 major medical presentations and 759 sanctuary intakes after excluding minor and dispensary visits. At medical, 57 major visits (9.2%) were discharged to sanctuary, accounting for 7.5% of sanctuary intakes. Additionally, 25 of 185 medical field calls (14%) were transported to the sanctuary. At the sanctuary, 26 attendees were sent directly to medical, and 30 were transferred after intake; thus, 4% of sanctuary encounters required medical, and 9.0% of medical visits originated in the sanctuary. Common reasons for transfer from medical to sanctuary were mild intoxication and/or need for ongoing stable observation. In contrast, from the sanctuary, there was a decreased level of consciousness, agitation, or specific medical red flags (e.g., pain, vomiting, etc).

Interdisciplinary collaboration between medical and sanctuary spaces is an essential asset within the public safety ecosystem at music festivals. These synergistic services provide ideal care to address diverse presentations with specific management goals and work closely together when patients overlap in their on-site care needs.

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Defining Hospital Avoidance at Mass Gathering Events – Which Patients Count?

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Introduction: One of the primary objectives of on-site medical services at mass gathering events is to minimize the impact on the local healthcare infrastructure. Although many case reports attempt to quantify this positive effect by expressing patient encounter volume in terms of ambulance or hospital avoidance metrics, there is no accepted definition for what constitutes an on-site medical visit that results in the prevention of formal community health services. This research aims to develop a working definition for operational use and data collection at events.

Methods: A mixed-methods research project was undertaken, utilizing an initial literature review and a set of qualitative interviews based on a questionnaire comprising 25 standardized, distinct clinical vignettes commonly found in the literature for mass gathering events. Interviews were conducted with 10 event medical doctors and 10 emergency doctors who do not do event medicine. These were transcribed and coded using standard qualitative methods, and the themes were explored until saturation was reached. The degree of agreement on hospital avoidance between interviewees and event vs. emergency doctors was recorded for each vignette.

Results: Results are in process. Participants generally agreed on the cases' on-site management, with some positively contributing to and others having no effect on hospital avoidance. Themes emerging from the qualitative interviews relevant to defining what constitutes avoidance included the degree of training (and hence the ability to treat and release), equipment considerations, acuity considerations, and on-site diagnostic capabilities.

Conclusion: A working definition of hospital avoidance by on-site medical event care is proposed. This definition can be used to quantify the positive effects of treatment on events in a standardized and reportable manner.

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A Fun Run - A Mass Gathering at Sydney's City Surf

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Summary: The Sun Herald City to Surf is an annual 14km Fun run that starts from the center of Sydney, Australia, to Bondi Beach. This event attracts a field of 90,000 domestic and international runners. This annual event generates a substantial number of casualties, mainly related to exercise-induced heat exhaustion and poorly prepared entrants. This event's history has seen runners suffer cardiac arrests in the past. The aim of early health engagement through the deployment of Emergency Medical Teams is to reduce mortality and morbidity from heat-related illness, with the added benefit of reducing presentations to an already burdened health system.

The profile of the event and the risk of incident occurrence ensure that comprehensive multi-agency planning and community engagement go into this event. The Health response to this event is extensive, from primary first aid, massage, and physiotherapy to resuscitation-capable Emergency Medical Teams (EMTS). Selection of the amount of health resources considers event history, which includes the number and type of presentations, time of presentation, and expected weather and risks identified.

Local health Districts are invited to apply to the EOI to supply Emergency Medical teams for this event. The standup of two medical facilities requires significant coverage from EMTs. Planning includes a proactive approach to messaging runners and a comprehensive review of previous events' casualties and weather conditions. The multiagency identified risks also ensure that health has plans in place, including mobile teams for start-line crushes.

This approach has seen a reduction in critical presentations over the last five years, while also seeing an increase in participant numbers due to the event's popularity. This successful event reduces the burden on the existing overburdened health system and allows an opportunity to prepare for and exercise in an out-of-hospital event to ensure our teams' ongoing readiness.

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Exploring Safety at Mass Gathering Events Through the Lens of Three Different Stakeholders

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Introduction: The work here reviews the role of those with responsibility for managing people and their safety at Mass Gathering Events (MGE). These are event managers, police, and medical personnel. Though the science underpinning mass gathering health and event management is developing rapidly, there is a lack of consistency around protocols and tools utilized to maintain safety at events.
Methods: This study adopted a qualitative descriptive methodology. Focus groups were used to gain insight into MGE safety through the lens of three different groups. Questions were centered on their understanding of safety at events, based on their experiences in MGEs.
Results: Participants in this study identified many risks to event safety, including a lack of risk assessment, communication, a lack of ownership of risk, and poor planning. Even though these risks were similar, each participant group identified their own perspective with their own ways of managing them. The authors suggest that all event stakeholders should focus on the interests of both the audience and the wider event community to work together to foster a safe, supportive, and trusting environment.
Conclusion: Safety has become increasingly significant in the vocabulary of researchers, managers, funding agencies, and public bodies involved in the provision of events. Accordingly, this paper comes at a time when there is an acute need for the appropriate application of psycho-social understanding and biophysical knowledge for the safe management of the social environment of MGE and the wider community.

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Experience Sharing and Pitfall Cases of Medical Rescue in the Taiwan Superbike Series Racing

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Summary: The Taiwan Superbike Series is a well-known motorcycle racing event, held three times a year, with each event spanning two days. Each event features a 15-minute qualifying session on the first day, followed by a seven-lap sprint race. The second day includes a 10-minute warm-up and a 15-lap main race. This article shares medical rescue experiences and notable pitfalls from a specific event in 2024.
At this event, a total of 156 riders participated, leading to 644 race starts. There were 50 instances where riders were brought to the medical station after falling, resulting in a medical utilization rate of 77.6 cases per 1,000 race starts. Two specific cases are noteworthy:
Case One: A 39-year-old male rider crashed during the qualifying session. Upon arrival at the medical station, he only exhibited an abrasion on his left wrist, and a detailed physical examination revealed no other issues. However, three and a half hours later, he returned with left chest pain. During this secondary evaluation, he exhibited memory loss, having no recollection of his previous visit. Additionally, the left chest contusion was not apparent in the first evaluation.
Case Two: A 31-year-old male rider crashed during the sprint race at the end of the first day, with no signs of discomfort or injury. However, the following day at noon, he returned due to dizziness. Similar to the first case, he also had no memory of visiting the medical station the previous day.
In summary, the medical utilization rate for riders in the Taiwan Superbike Racing is approximately 77.6 cases per 1,000 race starts. Additionally, concussions can sometimes be difficult to diagnose immediately, potentially delaying the recognition and diagnosis of certain injuries. These experiences underscore the importance of careful monitoring in future events to enhance rider safety in motorcycle racing.

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Special Resources for Mass Events: The Example of the Opening Ceremony of the Paris Olympic Games

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Summary: The opening ceremony of the Paris Olympic Games (POG) attracted over 500,000 spectators to both banks of the Seine River. Given the scale of the event and the risk of unforeseen emergencies, meticulous planning and exceptional preparation of the emergency medical services (EMS) were paramount. In the case of a disaster, the main difficulties are the crowds, saturated evacuation roads, and the impossibility of crossing the Seine River dividing Paris into 2 zones. This report aims to describe the use of some exceptional equipment to overcome these difficulties.
Two medical teams of motorcyclists, the Medical Moto Units (MMU), were deployed on both sides of the Seine River. Each team consisted of three members, including one medical doctor, and was equipped for Advanced Life Support (ALS). These agile teams were designed to navigate the congested streets and narrow lanes surrounding the ceremony site. Their mobility was essential to reaching victims quickly.
The major innovation in these special emergency resources is the "EVACARe." It is a collective ALS ambulance with 8 stations that allows patients under life support to be cared for for 12 hours in complete autonomy. Strategically parked close to the event site, the EVACARe was ready to respond to mass casualty incidents.
The POG demonstrated the importance of solid EMS preparation to guarantee the safety of participants. By strategically deploying exceptional response resources such as EVACARe and MMU, combined with highly trained personnel, the organizers effectively mitigated risks and reacted quickly to unforeseen challenges. The successful implementation of these measures serves as a model for future large-scale events.

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Revving up Readiness

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Summary: The Australian Medical Assistance Team (AUSMAT), a World Health Organization-verified Emergency Medical Team Type 2, provides rapid response capabilities for domestic and international health emergencies on behalf of the Australian Government. In the Northern Territory (NT), operational and administrative AUSMAT headquarters, personnel gain practical experience with operational procedures and equipment through engagement in local major events, where they serve as the advanced medical support team in conjunction with NT Health and local ambulance services. These often include high-velocity motor sports, which present substantial risks for severe injury and fatalities, necessitating advanced medical readiness.

The Strategic Events and Clinical Workforce team at the National Critical Care and Trauma Response Centre (NCCTRC) oversees the management and preparation of the equipment and team for the event. This preparation includes overseeing inventory, procurement, and medical consumables, as well as conducting "just-in-time training" and scenario-based simulation. AUSMAT members who have completed the requisite training are invited to participate in this initiative through an expression of interest process.

Participation in these major events enables AUSMAT members to refresh their familiarity with medical equipment, operational policies, and current clinical guidelines. Additionally, this engagement enhances the operational readiness and efficiency of the AUSMAT deployment cache and capability, ensuring the teams remain equipped, prepared, and ready for future events.

Participating as a member of the medical team for the NT Major events is an opportunity to develop collaborative relationships with local health services and enhance team cohesion. This participation also enhances the operational capability and visibility of the NCCTRC/AUSMAT, providing a competitive and valuable training platform for AUSMAT deployment readiness.

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Dual Disaster Dynamics: Assessing the Influence of COVID-19 on Emergency Incident Patterns

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Introduction: Pandemics, unlike other disasters, extend over prolonged periods, requiring continuous responses from both public and private sectors. The term "dual disaster" describes the occurrence of a pandemic alongside other emergencies. However, little research has explored how COVID-19 impacted non-pandemic emergencies.

Methods: This study analyzed emergency data from Taiwan's Emergency Medical Resources Management System (EMRMS) between 2018 and 2023. EMRMS is a web-based platform where hospitals report details such as date, age, sex, transport mode, triage level, disposition, and diagnosis during emergencies. We examined COVID-19-related policies from 2020 to 2023, categorizing them into four phases: Imported COVID (IC), Regional Epidemic (RE), Regulatory Relaxation (RR), and Extensive Community Transmission (ERT). Pre-pandemic data served as the non-COVID (NC) baseline. To compare emergency trends, annualized emergency rates were calculated for each phase, and casualty data, including triage levels, ICU needs, and mortality, were reviewed.

Results: A total of 734 emergencies involving 6,734 casualties were reported. The annualized emergency incidences were 172.8 (NC), 154.8 (IC), 85.9 (RE), 78.2 (RR), and 105.2 (ERT). Emergencies declined during the pandemic phases, though the proportion of patients transported by EMS remained stable. However, casualty severity increased, with more ICU admissions, surgeries, and deaths observed.

Conclusion: COVID-19 shifted emergency patterns, reducing incidence but increasing severity. Infection control and crowd management lowered emergency numbers, but resource-limited periods heightened the burden on healthcare systems. Preparedness for severe emergencies remains critical in dual disaster scenarios.

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Health Care Utilization Prediction Models and Tools During Mass Gathering Events: A Scoping Review

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Introduction: The ability to estimate healthcare utilization during mass gathering events can tremendously impact local healthcare resources and the cost of organizing such events. Various prediction models have been proposed in the literature to assist event organizers in forecasting medical service demands. This study will examine the extent and type of evidence regarding prediction modules and variables for healthcare utilization at various mass gatherings (MG) events.

Methods: The study included a search of four electronic databases (MEDLINE, EMBASE, Cochrane Library, and SCOPUS). Limits include the literature published on or after January 1, 2003. All retrieved citations looked at prediction models and variables of medical usage at all types of mass gathering events across all demographics, planned or spontaneous, that reported patient presentation rate (PPR) and/or transport to hospital rate (TTHR) at the event. All literature review articles were excluded.

Results: This scoping review analyzed 25 studies. Thirteen studies focused on prediction models for medical usage rates in MG, and 12 studies explored predictive variables for PPR in MG.

The Arbon model (used in nine studies) was the most frequently examined. The Hartman classification model appeared in seven studies. Plan Risk Manifestations (PRIMA), a Belgian tool, was used in three studies. The Zeitz method and the South Africa Mass Gathering Model (SA-MGM) are featured in two studies. Positively correlated variables with PPR included temperature (most cited, six times), event type (five times), heat index (four times), and crowd size (three times). Other less frequently cited variables (once each) included humidity, venue accessibility, festival format, and age class. Overall, temperature and event type were the most frequently used predictors across studies.
Conclusion: Healthcare utilization prediction tools vary widely. Healthcare organizations can help improve and optimize scarce resources during mass gathering events by understanding the variety and nature of these prediction tools.

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Experience Using Mobile Application (iDMAT) in Large-Scale Events to Collect Patients' Data

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Introduction: The Hualien Disaster Medical Assistance Team (DAMT), under the Hualien County Health Bureau, developed the iDMAT mobile application(app) to facilitate data collection and patient tracking during disaster responses. This app, while intended for disaster scenarios, was also utilized in large-scale events like marathons to evaluate its broader applicability.
Methods: App Setup and Use: Medical personnel downloaded the iDMAT app on authorized mobile devices to record patient information, triage, treatment, and disposition. Data synchronized to a cloud platform enabled the medical command center to monitor patients in real time.
Event Setting: During the annual Taroko Marathon with over 10,000 participants, seven medical stations, including a main station, were set up. The iDMAT app was used at the Tienhsiang and main stations, situated 20 km apart. Each station had one physician and two nurses, and an emergency physician supervised the entire event as the medical commander.
Results: From 7 a.m. to 2 p.m., a total of 61 patients were admitted to the two stations, while Tianxiang station had only nine patients because only full marathon runners arrived there. The cases included 20 females and 41 males, with triage outcomes as follows: 45 minor, 8 moderate, and 8 severe. All red-tagged (severe) patients were in shock but stabilized after fluid resuscitation and were discharged. Only one minor case required hospital transfer for further wound care.
Conclusion: Due to the low frequency of actual disaster events, tools like iDMAT are difficult to test in authentic disaster scenarios. The use of iDMAT in a large-scale event like the marathon highlights its value beyond disaster response. This adaptation demonstrates that disaster medical tools can be repurposed effectively in mass events, broadening their applicability. Moreover, large events can serve as practical testing grounds for disaster protocols, enhancing real-time command oversight and informing future disaster preparedness.

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Paris Olympics: Psychological Impact on Participants Playing the Role of Victims in a Disaster Exercise

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Introduction: During the Paris 2024 Olympic Games preparations, disaster medicine simulations were organized. One scenario featured the release of a neurotoxic agent into the bleachers of a stadium during a field hockey game, causing poisoning and a stampede in the audience. To design the situation more realistically, designated participants were assigned as victims and others as witnesses. The aim of this study was to assess the psychological impact of this exercise on these participants.
Methods: All 76 participants were volunteers. Thirty-five were designated as involved, 32 as moderately injured, 8 as seriously injured, and one as dead. Psychologists briefed 72% of participants before the exercise. Immediately after the start of the exercise, participants were informed that a neurotoxic agent was released by two terrorists. They were asked to follow a decontamination process in the stadium. This included medical care, with undressing and decontamination with absorbent material, followed by showers. Gender, age, occupation, similar experience, their opinion, and anxiety level (State-Trait Anxiety Inventory - STAI) were collected just before, immediately after, and one week after the exercise.
Results: The response rate was 89%, average age 37 years, sex ratio 0.7, 89% of participants had previous first-aid training, and 39% had previously participated in a similar disaster exercise. Anxiety levels ranged from 2% before exercise to 12% immediately after and 10% one week after exercise. The exercise was considered upsetting for 38% of participants, although this was not associated with a refusal or reluctance to take part in this type of exercise again (22%). Anxiety levels were not related to a previous briefing with psychologists or any similar experience.
Conclusion: Anxiety generated by this type of exercise could be anticipated by carefully avoiding recruiting overly emotional individuals. However, this did not affect participants' willingness to partake in future events.

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How to Design an Emergency Medical Services System for Mass Gathering Swimming Activity in Crossing Sun Moon Lake in Taiwan

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Summary: Once a year, during the Festival of Sun-Moon Lake in Nan-Tou County, Taiwan, a long-distance swimming mass gathering event (LDSMG) takes place. It's about 3 km from the launch to the landing area. The number of participants was 22,606 in 2024. This study aimed to collect patient data from the medical stations (launching and landing areas) and analyze the differences between them.

In 2024, the number of patients requiring treatment was determined from on-site data. A total of 152 patients presented at on-site medical stations (MSs). The medical utility rate is 0.67%, where 35 patients presented to launching MSs and 91 to landing MSs. The ages ranged from eight to 80 years. Eighty-four patients (55%) were male. Fifty-six patients were treated with medication (2.74 per 1,000 attendees). Four patients were taken to the hospital (0.04 per 1,000 attendees); two were from a landing MS. The injuries included trauma (47.3% vs 20.0%), such as abrasion, laceration, contusion, and hypothermia (8.7% vs 6.6%), eye problems (9.9% vs 0%), etc. The patients got specific problems like hypothermia, abrasions, and eye problems more often in landing MS.

The medical utilization rate was 0.84%, reached a high of 0.88%, then fell to 0.67% in 2024. The patient presentation rate (PPR) was quite the same from the data gathered on-site. The PPR of LDSMG was related to factors including the seating or standing, the outdoors or indoors, the mobility of the crowd, whether the activity was contained within a boundary, attendance figures, and humidity and temperature. It's especially related to the water temperature, visualization of the lifeguard, the capacity of the space in swimming, and the crowdedness of swimmers. The medical stations, including staff, supplies, and facilities, should be tailored to the medical needs of the swimmers accordingly.

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Reviewing the Evidence Base for the Legacy and Benefits of Mass Gatherings: How Can We Strengthen This?

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Introduction: Mass gathering (MG) events should be an opportunity to strengthen the host city/country's public health capacity and improve compliance with the International Health Regulations (2005). This legacy should be built into the planning for the event and receive investment; the evidence to support this happening is limited. This lack of evidence on the legacy of MGs was highlighted in the recent literature review undertaken to update the Public Health for Mass Gatherings: Key Considerations (KC2) (2015).
Methods: A systematic literature review methodology was used to search for relevant publications and grey literature of a wide range of MGs globally, focusing on evaluations, legacies, and impacts. This also included searches for specific technical areas, e.g., emergency response.
Results: The literature review identified a small number of peer-reviewed publications that explicitly address the health legacy and evaluation from MGs or the host city/country population (11 papers met criteria from 399 identified). This makes the justification of hosting major MGs challenging. There remains a significant barrier to building and sharing the evidence base for the health legacy and benefits of hosting an MG. Linking this to legal instruments such as the IHR (2005), which requires countries to prevent, detect, and respond to public health risks, could help gain host country/city investment, as it is recognized that MGs can increase this risk.
Conclusion: It was hoped that this updated literature review would identify new evidence for viable and sustainable legacies from MGs. However, the findings were limited and did not look at longer-term benefits. Legacy is often neglected due to a lack of funding, capacity, short-term thinking, and being overlooked by the focus on the smooth running of the event. Event organizers and host cities/countries should better incorporate and implement planning to reduce the risk to the event and provide sustainable legacies.

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Use of Handheld Ultrasound Systems at the Medical Service of a Music Festival in Germany – 5:20 - Five Minutes for Twenty Percent

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Introduction: The widespread availability of handheld point-of-care ultrasound systems (HHUS) has rapidly increased the number of preclinical emergency medicine ultrasound examinations in Germany. HHUS used by emergency physicians at the Southside Festival (SSF) in southern Germany was evaluated over several years according to its feasibility and ability to change patients' disposition and treatment process.
Methods: By questionnaire, the doctors performing the examination were asked about the indication, the body region examined, the ultrasound protocol used, if any, the duration of the examination, and any changes in the further procedure. In addition, the subjective assessment of the assessability, the visualization under the existing lighting, and the ultrasound experience of the users were surveyed.
Results: In three years, a total of 29 ultrasound examinations were assessed by the sonographers. The majority of examined regions were the abdomen (55.2%). 27.6% used the (e)FAST protocol; no protocol was used in 41.4%. Indications: 31.0% pain, 20.7% trauma, 27.6% examiner's interest, 24.1% confirmation of suspected diagnosis, 3.4% as part of CPR.

Duration: examination 41.4% <2 min, 41.4% 2-5 min. In 20.7%, the procedure was changed due to the examination. Assessability and visualization were rated 2 (1 very good - 6 poor). Half of the users considered themselves experienced.
Conclusion: Ultrasound examinations under medical service conditions at an MGE were feasible and accessible. The majority of examinations concerned the abdomen. US protocols were only used in half of the cases. The duration of the examination was usually less than 5 minutes, and the procedure was changed further by the examination in 20.6% of cases. Since there is supposed to be a large amount of extremities trauma in festival visitors, this percentage might be even higher when (in fracture and joint ultrasound) trained emergency physicians are in charge. Data collection will continue.

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Careful Planning and Preparedness for Mass-Gathering Events to Decrease Burden on Health Care Facilities

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Introduction: Fleadh Cheoil na hÉireann is an annual music festival showcasing Irish culture and artistic expression. Wexford Town (Pop 30,000) hosted the first Wexford Festival from August 4- 11, 2024, with an estimated 650,000 people visiting to enjoy the festivities. Although this mass-gathering event (MGE) presented significant socioeconomic benefits locally, there were concerns about the potential burden additional populations would place on local health care services at Wexford General Hospital (WGH), which was still recovering from fire damage.
Methods: A retrospective audit of the WGH emergency department (ED) over three months covering this period was performed to determine what effect (if any) this event had on local healthcare services. Generic attendance data were retrieved from automated daily reports for analysis and compared to periods before, during, and after the event.
Results: 14,161 patients presented to WGH ED during July, August, and September 2024. The highest monthly attendance (4957) was presented during the pre-event season in July (35.0%). 4638 (32.7%) patients presented in August during the Fleadh, and 4566 (32.2%) patients presented post-event month. The number of attendances arriving by ambulance to the ED increased by 25.53%, and ambulance presentations increased by 9.96% from July to August.
Conclusion: This MGE did not result in an expected increase in patient attendances to the local ED; however, there was an increased burden on ambulance services due to travel logistics, tourists unaware of the facility's location, and generic road closures. Because WGH was situated near the Fleadh (3.3km), there were greater traffic restrictions in the area as ambulances were the only permitted form of transfer for patients from the Fleadh medical team to WGH. Traffic restrictions are a necessary safety measure to mitigate risks of road trauma at MGEs, but this could be adapted more efficiently in preparation for the next Fleadh in 2025.

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Legacy in Mass Gatherings Medicine

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Summary: Mass gatherings present unique challenges and opportunities for public health systems. Effectively managing these events ensures attendees' safety and well-being and contributes to a lasting public health legacy by strengthening health systems and enhancing global health security. The evolution and activities of Mass Gathering Medicine are examined through the lens of an annual gathering of millions: the Hajj. By effectively addressing the health challenges associated with mass gatherings, host nations can transform these events into opportunities to strengthen health infrastructures, promote international collaboration, and leave an enduring public health legacy.

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MEDICAL ASSISTANCE

Good Medicine in Bad Places - A Tale of Three Military Deployments

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Summary: From 2020-2022, this author deployed three times with the US Army. These deployments involved a field hospital in Baghdad, Iraq; a no-notice deployment with a forward resuscitative surgical team before the fall of Kabul, Afghanistan; and a no-notice deployment with a forward resuscitative surgical team to Romania after Russia invaded Ukraine. This presentation:
1. Relives those deployments, as well as the moments leading up to those deployments, from the point of view of an Emergency Medicine Physician.
2. Discusses the unique medical cases seen in those austere environments, such as treatment of COVID-19 and hypoxia in a combat zone with a portable oxygen generator, treatment of a military working dog, diagnosis and management of infectious myositis, and mass casualties from the explosion at Abbey Gate in Kabul.
3. Discusses the NATO roles of care (e.g., Role 1, Role 2, Role 3, and Role 4).
4. Discusses CBRNE preparation in Eastern Europe.

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Civ-Mil Collaboration to Prepare Community-Health and Extended Care Facilities in Israel for Disaster Management–an Exemplary Model

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Summary: Over the last few decades, the Israeli Ministry of Health (MOH) Disaster and Emergency Division has employed a unique model of military-civilian collaboration to amplify efforts to prepare the Israeli health system for disaster management in all scenarios - both in general hospitals and in community settings. The MOH and Home-front Command (HFC) implement a joint annual preparation program, incorporating civilian training with military-led drills and exercises, in an all-civilian health system. The MOH Disaster and Emergency Division's Community Health Department and the HFC Community Health Branch jointly prepare all community health organizations: Health Districts, Health Funds, Geriatric and Mental Health Hospitals.

The ongoing "Iron Swords" war, following years of COVID, impacted workforce involvement in emergency preparation and management at all organizational hierarchies. This year, an HFC survey was conducted to assess this impact on perceived readiness for emergencies (PRE), including respondents' self-perceived awareness of their role in emergencies, ability to implement this role, and belief that their facility can successfully manage emergencies, using a 31-item questionnaire sent to community health and extended-care organizations in Israel. Significant variance was found between organization types in overall PRE, as well as between employees at different managerial levels and general employees. PRE was also significantly higher in scenarios where preparation included training and exercises.

Utilizing MOH-HFC teams to prepare an all-civilian health system is unique in that it enables the incorporation of a military approach to disaster and emergency management in civilian organizations. This significantly contributes to a "uniform language" of emergency management, and through this, enhances community health organizations' self-perceived readiness for emergencies. Examples of issues faced and coped with, such as responding to prolonged power outage scenarios, evacuating patients with special medical needs from war zones, providing military aid to hospitals, and more, will be presented.

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Mosul Multi-Agency Trauma Response

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Summary: The Mosul Trauma response was novel for several reasons:
1. WHO's Role in Coordinating Trauma Care: It was the first time the World Health Organization (WHO) took the lead role in coordinating trauma care in an active conflict setting. Traditionally, the WHO's role had been more about coordination in natural disasters or health emergencies, not in direct conflict zones.
2. Adaptation of Military Trauma Models for Civilians: The approach was inspired by military trauma systems, adapting concepts like the "golden hour" to provide rapid stabilization and care to civilians. This involved setting up Trauma Stabilization Points (TSPs) close to the frontlines (within 10 minutes) and field hospitals within an hour's reach, replicating military strategies for quick response and care.
3. Deployment of Humanitarians Near the Frontlines: The effort placed humanitarian medical teams closer to active combat zones than ever before, a significant deviation from traditional humanitarian approaches. This strategy aimed to save lives by reducing the time between injury and treatment, despite the heightened risks.
4. Involvement of a Private, For-Profit Medical Company: WHO contracted Aspen Medical, marking the first time WHO or any similar agency engaged a private, for-profit medical organization to provide trauma care in a conflict zone. This broke new ground by integrating private-sector capabilities into a traditionally NGO-dominated field, showing flexibility in responding to urgent medical needs.
5. Coordination with Military Forces: The trauma system was developed in close coordination with military operations, using military intelligence to help place medical facilities.

This integration of military and civilian efforts blurred lines traditionally maintained to preserve humanitarian neutrality, sparking discussions on the balance between effective care and adherence to humanitarian principles.

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Changing the Paradigm of Field Hospitals: The Application of Telemedicine in Ukraine

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Introduction: Field hospitals (FHs) play a crucial role in providing medical care during various crises, including natural disasters, pandemics, and conflicts. While the traditional model of FH has been in use for many years and has contributed substantially to medical care delivery, limitations, including resources, manpower, and access to specialized medical expertise, exist in this model. Telemedicine has emerged as a promising solution to this challenge.
Methods: The methodology involved collecting data on-site at the Sheba FH in Ukraine through direct observation of patient care. This data was compiled into a database containing patient information, conditions treated, and the type of care provided. To evaluate the suitability of telemedicine in different contexts, a conceptual model was created based on the empirical experience of content experts and a literature review.
Results: Of the 6,161 patients who received care at the FH, 103 consultations were conducted through telemedicine. The majority of these consultations involved the treatment of chronic diseases, with dermatology (22), radiology (20), oncology (8), and neurology (10) being the most common areas. Additionally, there were seven surgical consultations and six pediatric consultations. The conceptual framework developed suggests that in most scenarios, particularly slow-onset disasters and within 72 hours of a sudden-onset disaster, trauma complications tend to decrease significantly. Conversely, there is an increase in non-trauma emergencies, indirectly caused by infectious diseases, and accumulated elective care needs, where the use of telemedicine becomes more relevant and feasible.
Conclusion: The findings demonstrate the promising potential of telemedicine in changing the field of disaster medicine and response. By leveraging technology to provide remote access to specialized medical expertise, telemedicine can help bridge the gap in access to quality care that often exists in disaster scenarios. Moreover, by enabling remote consultations, telemedicine can help optimize the utilization of resources, allowing for more efficient resource allocation and reducing strain.

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Training Junior Members of an Emergency Medical Team Using an Educational Game

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Introduction: Although game-based applications have been used in disaster medicine education, no serious computer games have been designed specifically for training Emergency Medical Team (EMT) members. To address this need, a serious computer game called the IEMT-training game was developed. In this game, players assume the roles of EMT members, assess patient injuries in a virtual environment, and provide suitable treatment options.
Methods: The design of this study is a retrospective comparative analysis. Data from 251 EMT members were extracted from an EMT training database for analysis. The data collection process covered the 2019-2020 academic year. To compare the performance between the groups, a generalized estimating equation (GEE) approach was used to analyze the pre-, post-, and final test scores of EMT members, accounting for the potential correlation within the data. Additionally, a survey questionnaire was distributed to trainees to gather insights into teaching methods, and the responses were subsequently analyzed.
Results: Statistically significant differences were observed in the test scores between the lecture and game groups ($p < 0.05$). Specifically, the serious game group achieved higher knowledge retention scores than those in the lecture group ($p < 0.05$). The survey results indicated that the game group exhibited higher learning motivation scores and lower cognitive load compared with the lecture group.
Conclusion: The IEMT training game developed by the instructor team is a promising and effective method for training EMT members in disaster rescue. The game equips the trainees with the necessary skills and knowledge to respond effectively to emergencies. It is easy to comprehend, enhances knowledge retention and motivation to learn, and reduces cognitive load.

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The Health System Surge Capacity and Response to the Sudden Conflict that Developed into an Ongoing War

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Summary: Mega MCI poses a significant challenge to the health system, particularly in combat zones under fire. Such an event affects the ability of the EMS and health services to evacuate and provide adequate medical care. On 7 October 2023, Hamas forces attacked southern Israel from Gaza. The attacks resulted in over 3,000 casualties (wounded and dead) who were brought to hospitals; some of them were brought to hospitals a long time after their injury due to the difficulty of evacuation under fire, a fact that influenced their condition and their survival. The massive influx of casualties overwhelmed the two hospitals in the nearest war zone, which were located approximately 40 and 20 km from the attacked sites.

Since the attack, the State of Israel has been in a continuous state of war, creating a challenge to the health system, which is faced with the need to provide an adequate response to the war casualties and, at the same time, to continue the routine medical activity to meet the needs of the entire population in the time of "emergency "routine."

This work presents the Ministry of Health (MoH) Emergency Operation Center (EOC) activity during and since the October attack, the cooperation with the Home Front Command (HFC), and the coordinated patient management, transfers in and between hospitals, and field evacuations by ambulances and military forces. It also discusses the ongoing hospital and EMS functions during the "Emergency Routine." This presentation will provide an initial analysis of what happened, provide insights from the management level, and share lessons learned.

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Cooper University Health Care's Mid-Atlantic Severe Situation Exercise: A Model for Tactical Trauma Training

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Summary: Cooper University Health Care's Section of Military, Diplomatic & Field Surgical Affairs (MILDAF), in conjunction with members of Cooper's Trauma, Surgical, and Emergency Departments as well as the Salem County, New Jersey's Sheriff's Office and Office of Emergency Management developed a model for Tactical Trauma Training for all levels of Law Enforcement, EMS, and Fire/Rescue members.

In April 2024, more than 275 law enforcement, EMS providers, firefighters, and rescue personnel from New Jersey, Pennsylvania, Delaware, and New York attended the week-long Mid-Atlantic Severe Situation Exercise (MASSE), which focused on point-of-injury management for emergency responders. This exercise provided high-fidelity training with cadavers within simulated settings of real-world situations.

Events such as MASSE serve to develop and improve life-saving skills for first responders to ensure preparedness in the face of unpredictable, complex, and dangerous real-life crises. Scenarios at the MASSE training event included farm vehicle accidents, man-in-the-machine incidents, domestic violence, hostage situations, and an austere location medical intervention lab. First responders in attendance gained new skills to better equip them to deal with potential real-world situations and save lives.

Participants learned proper tourniquet placement from US Army medical personnel embedded at Cooper. Participants also received hands-on training from surgeons in the cadaver lab. Cadaver lab topics included emergent airway maneuvers, intraosseous vascular access, needle decompression of tension pneumothorax, and arterial bleeding control techniques in both extremity and junctional wounds. Instructors then challenged participants to use these skills in three unique live-fire scenarios and then provided immediate actionable feedback in a tactical and medical debrief.

By pooling resources and expertise, MASSE serves to improve the skills of local first responders and EMS, thereby enhancing public safety. The MILDAF team and their partners look forward to continually improving and executing high-fidelity hands-on training.

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Strengthening Poland's Emergency Preparedness Through Innovative Civil-Military Collaboration

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Summary: This field report investigates the integration of civil-military collaboration in Poland to strengthen emergency medical response frameworks, with a focus on lessons learned from the COVID-19 pandemic and the ongoing Russo-Ukrainian conflict. These crises have exposed gaps in Poland's emergency preparedness, particularly in coordination and rapid response capacities. By implementing a unified command structure, interoperable data sharing systems, and technology-driven strategies, such as predictive analytics, drone logistics, and digital health management, this report outlines a collaborative model that enhances Poland's emergency response efficiency. Key findings emphasize that civil-military collaboration, reinforced by joint training exercises and simulations, leads to faster mobilization, better resource allocation, and improved operational consistency across sectors. This model encourages a proactive approach by establishing communication protocols for real-time data exchange and optimizing readiness through frequent skill-building programs. Additionally, community engagement initiatives foster public awareness and resilience, providing a more comprehensive approach to disaster preparedness.

The significant impact of this integration model is reflected in enhanced responder competencies, a streamlined response framework, and a scalable, adaptable emergency response system that can be tailored to other contexts. The lessons drawn from these efforts serve as a foundation for building a sustainable, technology-enhanced civil-military collaboration that could inform similar emergency response strategies globally.

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Emergency Medical Teams Response Following 2023 Türkiye Earthquake - Characteristics, Activities and Operational Considerations

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Introduction: On February 6th, 2023, a 7.7-magnitude earthquake struck southeast Türkiye. There was widespread damage, with over 107,000 injured and more than 50,000 deaths. Since needs exceeded the country's capacities, deployment of emergency medical teams (EMTs) and the activation of the Emergency Medical Team Coordination Cell (EMTCC) were coordinated by the Turkish Ministry of Health and the WHO. Despite the scale of the response, there is little research analyzing EMTs' activities and characteristics. Analysis is critical to understand EMTs' impact amid the overall response and identify gaps to improve future EMT responses. The objective of this study is to assess EMT response to the Türkiye earthquake.
Methods: This mixed-method study includes a review of publicly available information and interviews with key informants who were involved in the EMT response following the

earthquake. Data will be gathered from online sources, building on information about EMT deployments published by the WHO. Data on EMT characteristics, services provided, and operational aspects will be collected.

Results: A total of 38 EMTs were deployed in response to the earthquake, comprising 4 national (UMKE) and 34 international EMTs. Among international EMTs, 47% arrived from the European region, and the Eastern Mediterranean and Western Pacific regions contributed 7 EMTs each. Out of the 38 deployed teams, 14 were WHO-classified. Regarding EMT type, 74% of EMTs were governmental, 18% were non-governmental organizations, and 8% were military teams. Regarding capacities, a majority (53%) were Type 2 and Type 1 Fixed (29%). Two Type 3, two Specialized Support Teams, and one Specialized Care Team deployed. Amid consultations (n = 50815), 63% were not related and 27% were indirectly related to the earthquake. Trauma only accounted for 20% of the caseload.

Conclusion: The results of this study will add to existing knowledge from previous disasters, identifying characteristics for effective EMT response and areas for improvement in future responses.

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The Emergency Medical Response Process During the 2024 Earthquake in Taiwan

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Summary: On the morning of April 3, 2024, at 7:58 AM, a magnitude 7.2 earthquake struck off the coast of Hualien, Taiwan. It caused seismic intensities of 6 on the Richter scale near the epicenter. Several buildings in downtown Hualien were tilted and damaged. The roads within Taroko National Park were severely damaged, resulting in traffic disruptions. Casualties were reported on the roads and at various tourist sites. A hotel was isolated due to road blockages, trapping around 600 people. On the first day, rescue and emergency medical response focused on Hualien City. All four hospitals in the city activated mass casualty protocols. The Urban Search and Rescue Team carried out search and rescue operations at the severely damaged "Uranus Building." The Hualien County Health Bureau also deployed a disaster medical team's advanced group to the site to gather information and perform medical tasks. After retrieving the body that had perished in the Uranus Building and confirming that all other buildings had been cleared, the search and rescue operations concluded on the first day.

On the second day, the focus shifted to evacuating the 600 people trapped at the Silks Place Taroko Hotel. The rescue teams set up a base camp at the road's maintenance public works station, and the National Airborne Service Corps helicopters airlifted the rescue teams near the hotel. After arriving at the hotel, they cooperated with the hotel staff to establish a command post. After evaluating the medical needs and risks, those requiring medical attention and vulnerable groups were prioritized for helicopter evacuation. A total of eight helicopter trips were carried out, evacuating 145 people.

This article will describe the situations and response measures encountered by the medical sector, particularly focusing on the assessment of medical needs and the support methods in isolated areas.

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Review Capacity and Standards of Local Emergency Medical Teams in the Post-Pandemic Period

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Introduction: To review the capacity and standards for Victorian Medical Assistance Teams (VMATs) within the context of national Emergency Medical Team (EMT) benchmarks in Australia and internationally.

The requirement for responsive, timely, agile, well-prepared, and scalable emergency medical responses has been demonstrated in recent years. Given ongoing climate and geopolitical challenges, the threat of civil conflict, and the stress on prehospital and health systems post-COVID, it is imperative that we ensure local EMTs are appropriately trained and prepared. In recent years, a focus for the WHO has been to build strong national disaster medical responses. Early national responses are considered most critical in major disasters and complex emergencies.

Methods: The study reviewed a State-based jurisdictional program, the VMATs, and compared it with national and international standards. A cross-sectional survey of key VMAT management personnel and clinical leads was conducted, with follow-up site visits to audit the current state of staffing, cache, training, exercising, and mobilization. In addition, a literature review including Medline search, local and international policies and standards was conducted, with interviews of national and international exemplar EMTs. Ethics approval was obtained from the University of Melbourne.

Results: Local EMTs reported substantial pressures that negatively impact training and exercising, challenges with staff turnover, maintenance of cache, and deployment challenges in the post-pandemic environment. Site visits following the online survey demonstrated improved compliance with training, exercising, and preparedness activities. Visits to other national and international teams demonstrated similar concerns more broadly.

Conclusion: Due to consistently reported post-pandemic pressures, there were significant challenges to EMTs. Surveys followed by site visits seemed to be a catalyst for improved compliance with training, exercising, and preparedness. A state-based EMT working group considered rationalization of VMAT numbers and location of teams in order to facilitate

best practice in team management and rapid mobilization of staff and equipment.

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Addressing Unanticipated Decision-Making in Real-Time Surprise Warfare: Maximizing the Effectiveness of Medical Forces in High-Risk Extremist Environments

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Introduction: The October 7, 2023, attack on Israel by Hamas was an unprecedented healthcare crisis. This assault resulted in over one thousand deaths and over 1,900 injuries, with around 360 individuals sustaining critical injuries. The immediate surge in urgent care needs overwhelmed even Israel's robust, universal health coverage system. This multi-faceted, extreme scenario highlighted the need for adaptive strategies. The Southern Command Medical Corps and the civilian health services encountered complex decision-making challenges, balancing immediate life-saving interventions with long-term healthcare management. This study examines the decision-making processes of senior medical officers, focusing on how they navigated the sudden, extreme demand for health services. The aim is to identify key areas for strengthening health systems to enhance their capacity to respond effectively to large-scale, unexpected crises.
Methods: The research employed a qualitative methodology involving a meticulous examination of documentation from military emergency discussion papers and interviews with seven Southern Command medical officers and eleven senior medical personnel who provided field aid. The objective was to gain an in-depth understanding of decision-making processes at both the headquarters and tactical levels.
Results: Five central themes emerged: the medical commanders' high level of professionalism, the presence of mature and confident leadership, the importance of continuous learning during routine, the provision of complete and explicit support to personnel in the field, and the constant endeavor to obtain comprehensive information about ongoing events.
Conclusion: This study provides a rare and unique insight into the decision-making processes of senior military medical officers. The identified themes suggest the potential for advancing the command capabilities of medical officers and commanders, irrespective of their rank or the nature of their medical assignments. These findings offer valuable lessons for strengthening the resilience and responsiveness of healthcare systems in the face of unanticipated crises, both in military and civilian contexts.

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Enhancing Emergency Medical Response Capacities: Insights from Global Disaster Experiences

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Introduction: The increase in the frequency, impact, and complexity of disasters, intensified by climate change and geopolitical instability, highlights the urgent need for enhanced medical surge capacities and disaster preparedness. This study analyzes disaster epidemiology and emergency medical team (EMT) deployments to inform region-specific preparedness and investments in medical surge capacity for future health crises.
Methods: Secondary data was used to estimate 50-year global and regional disaster trends and patterns. Regional cumulative crude and standardized frequency and impact (2006–2022) were estimated and compared. Additionally, a scoping review of EMT deployments from 2010 to 2023 was conducted.
Results: There has been a notable increase in disaster trends, particularly floods, storms, and conflicts. Disparities exist across WHO regions. The African Region experienced the highest frequency, and the Western Pacific Region reported the highest health impacts. However, per 100,000 population, Southern Asia, Eastern Mediterranean, and African regions have significantly higher disaster frequency and health impact, with fragile and conflict-affected countries bearing a disproportionate burden. From 2010 to 2023, EMT responses to over 80 disasters were reported, predominantly in low or middle-income countries. Most deployments reported were triggered by epidemics, meteorological disasters, and earthquakes, which caused the highest health impact. EMTs provided direct clinical care and increased bed capacities, but also supported local facilities through capacity building and technical support. Factors contributing to response effectiveness include EMTs' flexibility to adapt team configurations and tasking, and the role of national and regional EMTs. Challenges remain in the response to complex emergencies and the lack of data sharing.
Conclusion: This analysis highlights the role EMTs play in meeting health needs during diverse disasters. Regional variations in disaster frequency and impact emphasize the need for tailored EMTs, particularly during conflicts.

Strengthening local response capacities, improving data collection, and developing flexible strategies for diverse disaster scenarios are essential for effective interventions.

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Significance of Improving Information Literacy in Disaster Medical Support: Lessons From the 2024 Noto Earthquake

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Summary: The Noto Earthquake Disaster, with a magnitude of 7.6, struck the peninsula region of Japan on January 1, 2024, leading to 245 fatalities in the sparsely populated area. This disaster highlighted the critical role of information literacy in disaster medical support.

The Disaster Medical Assistance Teams (DMATs) encountered cases demonstrating the need for information assessment and response adaptation based on facility characteristics and evolving situations. For instance, medical staff at Hospital A remarked that the view from the hospital windows appeared to be changing. At first, the meaning of this non-technical message was not fully understood. However, this message later proved significant, indicating ongoing structural collapse due to repeated earthquakes. Consequently, the DMATs immediately arranged an urgent patient transfer to safer facilities, avoiding potential casualties. At Facility B, despite adequate medical supplies, persistent disaster-related deaths were reported.

Precise investigations revealed that a severe shortage of healthcare providers and overwhelming fatigue prevent healthcare providers from effectively using these supplies. In response, the DMATs continuously provided nursing support, enabling more effective care. These cases may emphasize the importance of information literacy in disaster medicine. Rather than solely relying on standardized data collection, DMATs need to adapt information collection methods to the individual context of each facility's characteristics and changing medical demands. Analyzing and interpreting diverse types of information could be important for timely, effective interventions.

In conclusion, enhancing information literacy among DMATs is important to ensure that information collection, interpretation, and application are consistent with institutional demands, which could ultimately improve patient outcomes in disaster settings.

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Collaboration Between Japanese and Taiwanese Medical NGOs in Response to the 2024 Noto Peninsula Earthquake

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Summary: Peace Winds Japan (PW), a Japanese NGO, is working on the Mutual Learning Project for Emergency Medical Support in Disaster-Prone Countries to enhance international cooperation in disaster medicine and improve disaster response capabilities between Taiwan, the Philippines, and Japan. As part of this initiative, PW has conducted joint training with medical teams from each country. Building on these efforts, PW collaborated with a Taiwanese civilian medical team during the Noto Peninsula Earthquake in January 2024 to support affected areas. This presentation reflects on its outcomes and challenges.

On the day of the earthquake, PW dispatched a response team and immediately initiated contact with the Taiwanese team, joining in the field on the second day after the disaster. Over a week, the Taiwanese team provided support not only in healthcare but also in other areas. Specifically, they assisted PW's medical team with patient consultations, vital sign measurements, organizing shelters, improving sanitary conditions, and distributing supplies.

During the acute phase, when human resources were limited, the Taiwanese team's support was essential and offered encouragement to those affected. The past training simulations proved effective, enabling smooth procedures, logistics, and communication. However, challenges remained, such as activity restrictions due to the lack of local medical license approval.

This experience reinforced the importance of mutual understanding and relationship-building during non-emergency times. Moving forward, PW intends to address these challenges and further strengthen the acceptance system for international support. It is hoped that this initiative will extend beyond Taiwan and the Philippines, spreading to neighboring countries and having a broader impact across the region.

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Military Medical Provider Perspectives During the New York COVID-19 Response

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Introduction: The response to the coronavirus disease 2019 pandemic in New York City (NYC) included unprecedented support from the DoD response, limited primarily to medical and public health response on domestic soil with intact infrastructure. This study seeks to identify the common perspectives, experiences, and challenges of DoD personnel participating in this historic response.

Methods: This is a phenomenological qualitative study of 16 military health care providers who deployed to NYC in

March 2020. This study was approved by the Institutional Review Board at the USU (No. DBS.2020.123). All participants served on either the United States Naval Ship Comfort or at the Javits Center. Semi-structured interviews were conducted exploring the participants' experiences while deployed to NYC. These interview scripts were then independently coded by five research team members.

Results: Four common themes and 12 subthemes were identified from the participants' responses. The themes (subthemes) were lack of preparation (unfamiliar mission and inadequate resources); confusion about integration with civilian health care (widespread, dynamic situation, and NYC overwhelmed), communication challenges (overall, misunderstanding and miscommunication resulting in tension, and patient handoffs); and adaptation and success (general, military-civilian liaison service, positive experience, and military support necessity).

Conclusion: This study provides unique insight into the DoD's initial response to the coronavirus disease 2019 pandemic in NYC. Using this experiential feedback from the DoD's pandemic responders could aid planners in improving the rapidity, effectiveness, and safety of military and civilian health care system integrations that may arise in the future.

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Evaluating Current Emergency Medical Teams (EMTs) Medical Tool Kit for Disaster Health Management in ASEAN Countries – First Phase Report

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Introduction: To achieve the target: "one ASEAN, one response" of the ARCH project**, the question is whether the existing EMTs within and among ASEAN countries are similar? Therefore, we have conducted the research.

(**): Project for Strengthening the ASEAN Regional Capacity on Disaster Health Management

Methods: A prospective, descriptive, cross-sectional study was designed for 5 target ASEAN member states (AMS): Indonesia, Malaysia, Philippines, Thailand, and Vietnam. The data of 8 EMTs in 3 targeted AMS (Indonesia, Philippines, and Vietnam) were collected from 10th September to 30th October 2024, using a data-collecting form developed in consultation with the ARCH project. Subsequently, data collection for 2 AMS, Malaysia and Thailand, is scheduled to be conducted.

Results: There were 4 EMTs at the national level (N-EMTs) and four international EMTs (I-EMTs). These four I-EMTs were waiting for WHO recognition under the classification of the EMT type 1 (fixed). The average number of registered EMT members was 91.13± 69.70 (5-189), of which I-EMTs had a larger number than N-EMTs. I-EMT members also had a more diverse professional structure than N-EMT members. EMTs were provided all seven main groups of medicines, including medicines for pain and palliative care, cardiovascular care, the respiratory tract, gastrointestinal diseases, diuretic effects, nervous system disorders, as well as infection control; however, no EMTs had all 30 medicine groups as recommended by WHO. 5/8 EMTs had cold chain drugs. The average expiry date of medicine ranged from 8.87± 6.41 months to 42±12.21 months. 100% of EMTs had planned for maintenance, periodic operation of medical equipment, and replacement of medication and medical supplies.

Conclusion: There were different workforces and medical materials, as well as medicines of EMTs, among ASEAN countries. It is necessary to develop a standard for EMTs from the ARCH project.

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Current Japanese Unique Disaster Assistance System Operated by the Small Specialized Care Teams in Noto Peninsula Earthquake

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Summary: Since the publication of the Classification and Minimum Standards for Foreign Medical Teams in Sudden Onset Disasters in 2013, significant progress has been made in developing a standardized approach, particularly among international emergency medical teams (iEMTs). Compared to iEMTs, national EMTs (nEMTs) have been developed in accordance with the local country's policy as Disaster Medical Assistance Teams (DMATs). In Japan, after the Great Hanshin Awaji Earthquake, the Japanese DMAT was established. The policy of Japanese DMAT is to have small, rapid, self-sufficient hospital-based teams that can operate immediately after a disaster. This concept has been applied to other professions, such as psychology, dentistry, and rehabilitation, among others. These teams established small, rapid, self-sufficient specialized care teams called DPAT (Disaster Psychiatric Assistance Team), JDAT (Japan Dental Alliance Team), JRAT (Japan Disaster Rehabilitation Assistance Team). This unique disaster assistance system had demonstrated its comprehensive effectiveness in the Noto Peninsula Earthquake. At least 16 specialized care teams (max 262 members in one day) had been dispatched to Suzu City Health and Medical Welfare Coordination Headquarters during the Noto Peninsula Earthquake. The coordination of these specialized care teams was provided by the coordination headquarters every morning, supported by the DMAT logistics team or the DMAT secretariat, such as large iEMTs. This concept has rapid deployment and little effect on the facility that dispatches the teams. However, sharing information and providing small

logistical support for self-sufficiency were challenging. Here, we describe the current Japanese unique disaster assistance system.

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Critical Considerations in Helicopter Evacuation of Injured Personnel From Combat Zones

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Summary: Israel and the IDF are committed to rapid response and advanced care in conflict situations. The evacuation of injured personnel from combat zones via helicopter involves multiple critical factors that influence the success of the operation. Key factors include the selection of the evacuation sector, determining optimal flight paths, and assessing hospital capabilities for trauma care. To enhance operational efficiency, advanced systems have been implemented, providing real-time visibility of the event location, helicopter position, and all relevant data, while maintaining operational security due to the classified nature of the information.

Additional considerations include weather conditions, concurrent events in the operational area, and the helicopter's landing capabilities. The number of injured personnel being evacuated, the hospital's current load, and its ability to transfer patients efficiently from the helipad to the treatment facility are crucial in determining the success of the evacuation.

Challenges associated with this role include managing high-pressure decision-making, processing vast amounts of information from various sources, and navigating uncertainty and incomplete data. Maintaining sharpness and alertness, particularly during night operations, is essential to ensure mission success.

Over the past few months, these systems and protocols have demonstrated high effectiveness, with minimal errors and rapid patient transfers to hospitals where quality care is provided. This experience underscores the importance of thorough preparation, precise coordination, and continuous assessment of both operational and medical factors in the successful execution of helicopter evacuations from combat zones in Israel.

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EMT Deployment for Natural Disaster During the COVID-19 Pandemic: A Lesson Learned from EMT Muhammadiyah Deployment

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Summary: As COVID-19 was declared a pandemic, it has become a significant concern worldwide, related to its high potential to destabilize many countries in the future. During the peak phase of the pandemic (2020-22), Indonesia also suffered a significant number of deaths and a high positive rate. Indonesia, a country with a high risk of natural disasters, faced severe challenges, as it contended with the pandemic in addition to simultaneous natural disasters, including earthquakes in West Sulawesi and East Nusa Tenggara. Muhammadiyah Indonesia, one of the largest philanthropic organizations in Indonesia, established the Muhammadiyah Covid-19 Command Center as a central hub for managing the pandemic. The pandemic did not stop Muhammadiyah's efforts in handling natural disasters, which included sending emergency medical teams to areas affected by the earthquake in West Sulawesi and flash floods in East Nusa Tenggara. During the team's assignment, adjustments to assignment procedures were made to prevent the transmission of COVID-19 infection between medical volunteers and the community. Supervision and evaluation of the special procedures were carried out intensively, resulting in an excellent output of fewer than 5% positive cases among medical volunteers. Lessons learned are that emergency medical response for sudden onset disasters (SOD) during the COVID-19 pandemic can be conducted with specific health protocols. Logistics, especially personal protective equipment (PPE) and additional facilities related to the COVID-19 pandemic, played a crucial role during this deployment. It is essential to improve and closely monitor the understanding of health protocols among all personnel during deployment. Assessing the affected area for COVID-19 management, including tracing, testing, treatment, and establishing a referral system, is a must. Additionally, emergency procedures regarding COVID-19 must be prepared as early as possible to ensure an effective response.

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Modeling and Simulating Combat Casualty Throughput in Civilian Health Care Facilities

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Introduction: This study is part of the congressionally mandated NDMS Pilot Project, which evaluates civilian healthcare system readiness to manage up to 1,000 daily combat casualties per day over 100 days. It aims to simulate patient throughput for high-casualty scenarios in the National Capital Region (NCR). Researchers designed a simulation model to assess healthcare resource allocation, patient flow, and throughput constraints across NCR NDMS-enrolled facilities.

Methods: The simulation was built in Simio™ software. Random iterations of 204 detailed casualty case types were used to create a segment of the daily national casualty load, reflecting the varied injury types and medical needs projected in the setting of near-peer conventional war. The simulation matches patients to "adequate Healthcare Facilities (HCF)" with appropriate specialties and bed types. A Decision Support System was developed for patient assignment, incorporating real-time capacity assessments through telemedicine links. Each simulation run involved 100 replications across 100 days, capturing patient metrics for minimal, average, and maximum patient

journey times. A sensitivity analysis examined differences in casualty types and other simulation parameters.
Results: The NDMS Bethesda-FCC simulation scenario managed approximately 49% throughput, with significant wait times for Med/Surg and ARU beds, highlighting constraints in specialty care. Expanding the Bethesda-FCC model to include 13 additional Baltimore FCC facilities improved throughput to 62%, with average patient time-in-system reduced by 21.7%. Sensitivity analyses demonstrated that increased bed capacity and rapid discharge to post-acute care facilities significantly enhanced patient throughput.
Conclusion: This study underscores the challenges of managing sustained high-casualty surges within the current NDMS structure, identifying critical gaps in specialty care resources and post-acute care capacity. Expanding NDMS facility networks and enhancing discharge pathways could substantially improve patient throughput. This model offers a foundational tool for NDMS planning, with implications for optimizing patient and resource distribution and improving regional medical response to high-casualty situations.

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How We Tried to Prevent Disaster- Related Deaths at an Evacuation Center During the 2024 Noto Peninsula Earthquake

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Summary:

- Event type: earthquake
- Event onset date: January 1, 2024
- Location of event: Ishikawa, Japan
- Response type: medical relief at an evacuation center

During the 2024 Noto Peninsula Earthquake, from January 3 to 24, Nippon Medical School Hospital dispatched eight medical teams in a row, with 39 medical staff (15 doctors, seven nurses, 10 paramedics, five pharmacists, and two radiographers). These teams provided 24-hour medical services at a first-aid station in a designated evacuation center with a capacity of approximately 700 evacuees. Over the three weeks, 204 patients received medical care, including 57 patients diagnosed with coronavirus disease, which posed significant challenges for infection control.

Additionally, these teams served as medical liaisons, collaborating with other support organizations to enhance sanitary conditions and reinforce health management practices. These teams implemented phase-specific interventions, such as conducting evacuation center assessments, screening the health status of individuals requiring assistance, supporting the reopening of the school used as an evacuation center, and coordinating with local healthcare systems during the chronic phase of disaster response. The number of evacuees gradually decreased, with only 92 remaining by January 24, when the first-aid station was decommissioned.

These coordinated efforts supported evacuation center operations led by the local authorities and residents. Each team played a role in preventing fatalities and improving the quality of life within the evacuation center, while adapting to the evolving needs of each phase. Ultimately, the absence of fatalities during the operational period underscored the effectiveness of these collaborative health interventions.

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Comparison of Treatment Accuracy Between Hospital Personnel and Regional Health Center Staff - Case Study of Regional Disaster Drill in Taiwan

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Introduction: A Disaster Medical Assistance Team (DMAT) provides rapid-response medical care, supports overwhelmed hospitals, and conducts patient triage and emergency care. In Taiwan, most DMATs are hospital-based, formed of healthcare personnel from the same hospital. But in Eastern Taiwan, due to elongated terrain and fewer medical personnel, regional health center staff are utilized for DMAT. These health center staff typically focus on preventive medicine and chronic care, resulting in less experience with emergency cases. This study aimed to explore the differences in emergency medical responses between health center personnel and hospital staff within disaster medical teams.
Methods: On October 15, 2024, a DMAT drill was held in Taitung, simulating a magnitude 7 earthquake. Two teams were formed to treat simulated patients, with an injury distribution of 50% mild, 30% moderate, and 20% severe. Station A comprised a newly established team from health center personnel, while Station B consisted of a five-year-old DMAT with hospital staff. Key assessment items included wound cleaning and dressing, limb stabilization, airway management, and continuous assessments of consciousness and vital signs. Results were analyzed to compare the accuracy of medical interventions.
Results: At Station A, 21 patients were encountered, with two excluded as black triage, resulting in 19 treated patients and a treatment accuracy of 93.4%. Station B treated 24 of 25 patients (excluding one black triage), achieving a 96.2% accuracy. The percentage of completely correct treatments was 73.7% for Station A and 83.3% for Station B. Repeated assessments of consciousness and vital signs were frequently overlooked at both stations.
Conclusion: The findings indicated no statistically significant differences in the performance of health center personnel compared to hospital staff. Thus, health center personnel, with appropriate disaster training, can effectively perform emergency medical tasks in pre-hospital settings.

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Cooperation Between the Disaster Medical Team and the Special Search and Rescue Medical Team - 2024 Earthquake in Taroko, Hualien, Taiwan

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Summary: On April 3, 2024, an earthquake measuring 7.2 on the Richter scale occurred off the coast of Hualien County, Taiwan. This earthquake was the largest earthquake in Taiwan after the September 21 earthquake in 1999. The Taroko National Park, located in the northern part of Hualien City, had serious rockfalls and collapses; many tourists and vehicles were trapped on the trails and tunnels waiting to be rescued. The non-governmental organization, the Taiwan Development Association for Disaster Medical Teams, the disaster preparedness and rescue group, signed a cooperation agreement with the Special Search and Rescue (SSAR) Team and immediately formed an advance team to carry out the rescue mission.

The SSAR team of the National Fire Agency and from neighboring counties and cities were responsible for coordinating rescue missions at the disaster site. Three of these teams have doctors, nurses, and emergency paramedics. Formation of an SSAR medical team to accompany the disaster relief mission. It was anticipated that more people or injuries would be extricated from the Taroko National Park on the second day of the disaster, and initial assessment, medical assistance, and medical evacuation assistance.

The disaster medical advance team was dispatched by the on-site command center to perform medical operations at the scene of Taroko National Park with the SSAR medical team, sharing human resources and medical supplies, and at the same time being responsible for the evacuation of patients from the medical station. 181 people were monitored by the medical station and treated by the doctors for the evacuation. This was the first time that the disaster medical team and the SSAR medical teams cooperated in the rescue of a large-scale earthquake disaster in Taiwan in the past 25 years.

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Evaluating the Impact of Large-Scale MCI Training on Disaster Response: Insights from Vista Forge and Hurricane Helene in Western North Carolina

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Introduction: The increasing frequency and intensity of natural disasters necessitate robust and effective training for emergency responders. Large-scale multi-casualty incident (MCI) simulations offer a platform for participants to experience high-pressure scenarios that mimic real-world challenges. In February 2024, Charlotte's Vista Forge Large MCI training exercise provided such an opportunity, involving emergency medical services (EMS) personnel, firefighters, the NC National Guard, and the Air Force. This study evaluates how participation in the Vista Forge MCI influenced responders' performance during the subsequent real-world emergency: Hurricane Helene, which impacted Western North Carolina. By analyzing survey responses from participants, we assess the perceived effectiveness of training in enhancing readiness, coordination, and response efficiency.
Methods: This study utilized a mixed-methods approach, collecting survey data from participants who attended the Vista Forge MCI in February 2024. Surveys were distributed to participants following their deployment in response to Hurricane Helene. Quantitative measures focused on self-reported improvements in readiness, response coordination, decision-making, and overall confidence. Qualitative feedback provided deeper insights into the training's relevance and the real-world applicability of skills gained.
Results: Hurricane Helene occurred in September of 2024. Due to the timeframe, the study and IRB process are currently underway but not completed. Data and full results will be available by March 2025.
Conclusion: Hurricane Helene occurred in September of 2024. Due to the timeframe, the study and IRB process are currently underway but not completed. Data and full results will be available by March 2025.

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Standardization of Trauma Centers in Israel

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Summary: Public General hospitals in Israel must provide Emergency and Trauma care 24/7 without bias or connection. Hospitals differ in their ability to provide trauma care for different types of injuries, availability, infrastructure, services, and manpower. The MOH established a Trauma Committee to apply trauma care standards according to universal standards; hospitals are classified into three levels of trauma care: a Level One Trauma Center, a Regional Trauma Center, and a Local Trauma Hospital. The criteria include specialist physicians, nurses, nurse coordinators, other supporting medical and paramedical teams, Trauma Unit capacity and capabilities, Trauma Registration as part of the national system, standard medical equipment in the ED's trauma Unit, Internal guidelines and procedures, Quality Assurance of care for the injured, research, and Trauma Education.

Six of the twenty-eight hospitals assessed by the committee were recognized as Level One Trauma Centers; one medical center was required to complete deficiencies and is in the re-evaluation process. Seven Medical Centers were approved as Regional Trauma Centers. Three medical centers were required to complete

deficiencies and participate in the re-evaluation process. Six hospitals are approved as local trauma hospitals, but another six do not meet the requirements, and their recognition has been delayed.

At this point, some hospitals do not meet the required standard due to a lack of motivation to promote their system and blame it on a lack of budgets, the need for preparation, appointment of positions, and commitment. The committee's hands are tied because it cannot oblige hospitals to fulfill the recommended standards. In the absence of the ability to "punish," it is possible that some hospitals will not be part of the standard Trauma care in the national trauma system. Moreover, their Trauma Care standard may be inadequate. The committee needs to have the legal authority to enforce its recommendation.

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The Civilian-Military Collaboration for Mega-Disasters Rescue by Japanese Self Defense Force (JSDF) and US Military - From Operation Tomodachi (2011) to Noto Peninsula Earthquake (2024)

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Summary: The civilian-military collaboration for mega disaster rescue is performed as an operation under civilian control. In Japan, only the JSDF and the US military can offer agile C4ISR systems and 3-D operation by a joint task force. This paper shows the activities of Operation Tomodachi and the Noto Peninsula Earthquake.

Operation Tomodachi at the Mega East Japan Earthquake
In 2011, the political situation in Asia was not dangerous due to the six countries' meeting format. Nuclear power plants in Fukushima experienced a meltdown due to a tsunami. Rescue teams were required to manage the CBRNE disaster, and CBIRF was dispatched from the US Marines. JSDF FDMA(Fire and Disaster Management Agency) prevented the China syndrome by brave reactor cooling operations from land and air. The US military conducted a 3-D rescue operation using an aircraft carrier and an amphibious assault ship. JSDF sent over 100,000 soldiers for rescue. Airport and main highways were repaired quickly.

Noto Peninsula Earthquake:

In January 2024, the political situation was critical due to the Ukraine war, the Hamas attack, and the Taiwan crisis. Both the JSDF and the US military were on high alert. Fortunately, the earthquake area was limited, and the JSDF base near the Noto Peninsula was not damaged. JSDF, National Police Agency, FDMA, and Japan Coast Guard performed 3-D rescue operations. Innovative devices such as LCAC from an amphibious ship or multi-role drones were activated. JSDF provided eight months of operation for lifelines in the NOTO area. No looting or riots were reported.

Today, the risk of the Nankai Trough Mega Earthquake is increasing, and JSDF and the US military are required for disaster rescue and defense. Available forces depend on international circumstances. The Security Treaty Between the US and Japan has become the backbone for defense, economic activity, and disaster resilience.

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Report on Disaster Relief Activities at Welfare Shelters Set Up After a Major Earthquake in an Aging Society

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Summary: The aim of this presentation is to clarify the activities of the NPO Emergency Medical Team (EMT) during the Noto Peninsula earthquake and to systematize the functions and improve the effectiveness of EMT activities in future mega-disasters. All the activities of the EMT have been systematically summarized, including the EMT's construction and zoning of evacuation centers, as well as descriptions of medical activities for oral care, pressure injuries, deep vein thrombosis (DVT), and medication management, mainly for the elderly, who were 65% of clinic visitors.

The Noto Peninsula earthquake was characterized by a rapidly aging population and complex medical and epidemiological issues. We collaborated with various professional organizations and institutions, including the local medical association, to emphasize the importance of zoning in evacuation shelters and medical care, particularly for oral care, pressure injuries, and DVT, in preparation for future mega-disasters.

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Cooper University Health Care's Section of Military, Diplomatic, and Field Surgical Affairs

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Summary: Cooper University Health Care serves as the only Level I Trauma Center for all of southern New Jersey and is one of the busiest trauma centers in the region. Due to its high volume and expertise in surgery and critical care, Cooper has become one of the premier sites to train medical providers from every military branch, as well as multiple local, state, and federal government agencies and international partners. Cooper University Health Care's Section of Military, Diplomatic & Field Surgical Affairs (MILDAF) provides the leadership and organizational support to successfully train a large variety of military and governmental medical personnel.

In 2019, Cooper Health and the US Army Surgeon General's Office established a military-civilian partnership to train Army medical personnel in trauma and critical care. Cooper was the first health system in the nation to provide training for Army trauma teams as part of the Army Medicine Military-Civilian Trauma Team Training (AMCT3) Program. Additionally, Cooper trains Army enlisted medical personnel as part of the SMART Program (Strategic Medical Asset Readiness Training Program) and

Special Operations Combat Medics in support of the John F. Kennedy Special Warfare Center and School.

In addition to military training, Cooper also helps train members of the Department of Homeland Security, medical personnel, Department of State Guardian emergency management specialists, and Department of Justice medical personnel. Cooper University Health Care can be the prototype of a successful military/governmental and civilian partnership by having 1) executive leadership support and direct reporting, 2) a hospital champion, 3) validated trauma volume, 4) infrastructure, 5) onsite embedded preceptors, 6) simulation/cadaver/live-tissue/research, 7) clear communication for deployment readiness, and 8) hospital staff buy-in and commitment.

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General Practitioner as a Prehospital Care Provider

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Introduction: Prehospital care is a health service provided on scene and during the transfer of the patient to a definitive center. It provides life-saving support as soon as possible to enhance survival. The most common modes of transportation include Helicopter Emergency Medical Service (HEMS), Ground Emergency Medical Service (GEMS), jet planes, and fixed-wing aircraft. The General practitioners (GPs) must be competent with multiple skills to provide high-quality prehospital care, and their role starts from the first inquiry call and continues even after the safe transfer of patients to the definitive center.

Methods: A retrospective analysis of prehospital services provided by the Grande International Hospital emergency team over the last two and a half years (October 2021 to December 2023).

Results: In total, 421 HEMS cases landed in the Grande International Hospital from October 2021 to December 2023. Among these 228 HEMS cases, a medical team led by General Practitioners (GPs) was present.

Conclusion: General practitioners (GPs) play a vital role as team leaders in providing high-quality pre-hospital/intra-hospital care in the majority of emergency medical service cases in Nepal. Ongoing efforts to improve and expand these services contribute to saving lives and improving healthcare accessibility in Nepal.

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Comparison of Triage Accuracy Between EMS and Healthcare Personnel Using START Triage: A Case Study of the Eastern Region Disaster Drill

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Introduction: Disaster management is an ongoing planning process aimed at reducing uncertainty and mitigating hazards in dangerous situations. The disaster cycle is divided into four interdependent phases: mitigation, preparedness, response, and recovery. Although mitigation is the most crucial, given the frequent disasters in Eastern Taiwan in recent years, there has been increased emphasis on preparedness. Training exercises have been implemented to improve response capabilities and reduce casualties in actual disaster scenarios.

On October 15, 2024, a disaster medical team drill was held in Taitung, simulating a shallow 7.0-magnitude earthquake in a mountainous region. Medical teams, formed by two distinct teams, mainly managed trauma cases.

Methods: This prospective observational study had a mild-to-severe injury ratio of 5:3:2. Patients were assigned to either Station A, staffed by advanced emergency medical technicians (EMTs), or Station B, staffed by hospital nurses. Both groups had completed START triage and disaster medical training. Each triaged the 30 patients, and accuracy rates were compared across roles.

Results: Statistical analysis revealed that Station A handled 22 patients with an accuracy of 68.2%, whereas Station B handled 26 patients with an accuracy of 57.7%.

Conclusion: Although literature suggests that healthcare personnel generally have higher triage accuracy than EMTs, EMTs perform triage faster, making them better suited for rapid disaster response. In this study, EMTs showed higher accuracy than nurses, potentially due to EMTs' frequent training in START, unlike nurses, who typically use a five-level triage system. Thus, it is recommended that EMTs lead triage in disaster scenarios.

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The Potentiality of Judo Therapy in Disaster Relief: Insights From the Japan Disaster Relief Medical Team in Response to the Earthquake Damage in the Republic of Türkiye

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Summary: In response to the Turkey-Syria earthquake of February 2023, the Japan Disaster Relief (JDR) Medical Team was deployed to Gaziantep as a Type-2 Emergency Medical Team from February 10 to March 24, 2023. A total of 1,946 patients visited the disaster relief site. Three deployment batches were dispatched, with the first and second including judo therapists assigned as logisticians. Judo therapists, as a unique medical profession in Japan, provide conservative treatment for acute orthopedic injuries, including fractures, dislocations, and sprains. Due to the high patient volume, these therapists contributed to the rehabilitation department together with physical therapists. This report describes their experiences and explores the potential applications of judo therapy in future disasters.

Data on patients who visited the rehabilitation department were obtained from the Japan International Cooperation Agency. Judo therapists self-reported the number of patients treated.

Treatment methodologies were assessed through structured interviews with the therapists. Ethical considerations adhered to the Declaration of Helsinki.

During the first and second batches, 198 patients received care, representing 72.5% of the total rehabilitation department users. Among these, 79 patients were treated by judo therapists, constituting 28.9% of all rehabilitation department users. Operating with limited resources, judo therapists utilized locally available items to create immobilization devices for treating knee ligament injuries.

This experience indicates the importance of integrating traditional treatment into emergency medical responses. The ability to provide care in disaster areas and evacuation centers during large-scale emergencies suggests the potential of traditional medicine, including judo therapy, in disaster situations. This approach can enhance the overall resilience of affected communities and contribute to the well-being of individuals facing the challenges of recovery.

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Operational Model of the Advance Team in Hualien County Disaster Medical Assistance Team

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Summary: Located in eastern Taiwan, Hualien County is the largest county by area. This county is vast but elongated, with 93% of its land covered by mountains and rivers. Therefore, when disasters like earthquakes or typhoons strike, roads are often blocked by mudflows, falling rocks, or landslides, isolating affected areas and making it difficult for medical resources to reach them.

To enhance mobility in responding to the urgent medical needs of multi-site or island-like disaster areas, the Hualien County Disaster Medical Assistance Team has formed an Advanced Team. This team includes one logistics officer, one administrative officer, and three medical personnel: one doctor and two nurses. The main goals of the Advanced Team are reconnaissance and emergency medical support. Before establishing medical stations, they provide information on risk conditions and healthcare in the disaster areas.

Upon arrival in the disaster area, the Advanced Team will conduct a rapid assessment of local conditions, safety risks, casualties, medical needs, and public health resources. Based on casualties, temporary medical stations will be set up to provide emergency medical services. Simultaneously, contact points will be established to maintain ongoing communication and information exchange with hospitals, the government, and non-governmental organizations. After the above efforts, the team leader will decide whether to activate the main disaster medical team based on conditions in the area and guide them in the handover of the medical station.

The author, a member of the Hualien County Disaster Medical Team's operational unit, served as a registered nurse on the Advanced Team during two local earthquake disasters. This report shares insights from disaster site assessments and operational models used in advanced missions, exploring the differences between them. Through this experience, it aims to guide future teams in quickly assessing disaster areas to safeguard residents' health, safety, and sanitation.

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Survival of the Fastest? A Descriptive Analysis of Severely Injured Trauma Patients Primarily Admitted or Secondarily Transferred to Major Trauma Centers in a Danish Inclusive Trauma System

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Introduction: Trauma systems are crucial for enhancing survival and quality of life for trauma patients. Understanding trauma triage and patient outcomes is essential for optimizing resource allocation and trauma care. The aim was to explore prehospital trauma triage in Region Zealand, Denmark. Specifically, characteristics for patients who were either primarily admitted or secondarily transferred to Major Trauma Centers were described.
Methods: A retrospective descriptive study of severely injured trauma patients was conducted from January 2017 to December 2021.
Results: The study comprised 744 patients, including 55.6% primary and 44.4% secondary patients. Overall, men accounted for 70.2% of patients, and 66.1% were aged 18-65 years. The secondary patients included more women - 34.2% vs. 26.3% and a higher proportion of Injury Severity Score of ≥15 - 59.6% vs. 47.8%, compared to primary patients. 30-day survival was higher for secondary patients - 92.7% vs 87%. Medical dispatchers assessed urgency as Emergency level A for 98.1% of primary patients and 86.3% of secondary patients. Physician-staffed prehospital units attended primary patients first more frequently - 17.1% vs. 3.5%. Response times were similar, but time at the scene was longer for primary patients, whereas time from injury to arrival at a Major Trauma Center was longer for secondary patients.
Conclusion: Secondary trauma patients had higher Injury Severity Scores and better survival rates. They were considered less urgent by medical dispatchers and less frequently assessed by physician-staffed units. Prospective quality data are needed

for further investigation of optimal triage and continuous quality improvement in trauma care.

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The Role of Volunteers During the Golden Hours After the 2023 Türkiye Earthquake

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Summary: The two major earthquakes on February 6, 2023, affected 11 provinces and were some of the most devastating disasters experienced by Türkiye. The golden hours, the first 72 hours of the earthquake, were of critical importance for saving lives, search and rescue efforts, and meeting the basic needs of the survivors. Many difficulties were experienced during these golden hours, which led to an increase in the loss of life and growing grievances.
Major Challenges:

- Lack of coordination led to delays, chaos, and anger.
- Transportation problems made it difficult for search and rescue teams and aid trucks.
- Communication disruption made coordination difficult.
- Inadequate shelter and hygiene increased the load on the health system.
- Inadequate aid
- Season

Promising Efforts Despite Challenges:

Despite all these difficulties, search and rescue teams, non-governmental organizations, and volunteers worked with great devotion during the golden hours of the earthquake and saved many lives.

The Kahramanmaraş Earthquake on February 6, 2023, was one of the most devastating disasters in Türkiye's history. The system may fail, but the people heal from their wounds. Disaster Medicine leaders can lead the society in preparedness, where volunteers can receive first-aid and light search and rescue training to save lives during the critical "golden hours" of disaster management. The lessons learned from this earthquake can serve as a guide for the future.

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The New Protocol: Bringing the Hospital to the Scene

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Summary: On October 4th, 2024, the New Taipei City Fire Department received a call about a middle-aged man trapped under a large stone weighing approximately 2 tons following a landslide. The landslide was triggered by heavy rains from Typhoon Krathon, which struck Taiwan. The local fire squad was initially dispatched to free the man, but was unsuccessful. As time passed, firefighters grew increasingly concerned about the man's medical condition due to prolonged entrapment.

"Special Medical Response unit" was then activated, implementing a new protocol developed by the New Taipei City Fire Department. This protocol involves collaboration between trained medical professionals and firefighters to provide advanced medical support during complex rescues. A key feature is the deployment of a specialized medical team directly to the scene, including surgeons, emergency physicians, nurses, and paramedics. Aside from standard prehospital management, this team can deliver on-site advanced medical care, such as administering blood transfusions and managing pain with controlled medications. In extreme cases, they are also trained to perform field amputations to expedite evacuation. This two-tier response involves dispatching an ambulance to transport the medical team, while a mobile surgical truck collects medications and blood products from a contracted hospital before heading to the site as quickly as possible.

In this particular case, upon arrival, the medical team administered tranexamic acid to control bleeding and managed the patient's pain with tramadol. They also coordinated with the receiving hospital to prepare the trauma team in advance. The team monitored the patient's condition throughout the rescue, and once successfully evacuated, he was transported to a level-one trauma center for further treatment. The patient was later diagnosed with crush injuries and rhabdomyolysis. This case highlights the critical role of advanced emergency protocols in enhancing patient outcomes during complex rescue operations.

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Retrospective Analysis of the Emergency Medical Team (EMT) Dispatched by the Accident and Emergency Department (A&E) at Tuen Mun Hospital

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Summary: Prehospital emergency care, a subspecialty of Emergency Medicine, is primarily provided by the Ambulance Command of the Fire Service Department in Hong Kong. The Government Flying Service also provides emergency care in Hong Kong's airspace and a significant portion of the South China Sea. As part of the Hospital Authority Accident & Emergency Department response, Medical Control Officers (MCOs) and Emergency Medical Team (EMT) are dispatched to disaster scenes to provide on-site triage, emergency stabilization treatment, and advice on orderly diversions to hospitals.

The objectives of this analysis were:

- To examine the nature of EMT activations
- To analyze the characteristics and outcomes of EMT patients
- To analyze the location of accident blackspots in the Tuen Mun District

Data were collected retrospectively from the Pre-Hospital Emergency Care database in the Accident and Emergency Department from January 1st, 2011, to December 31st, 2021. All clinical records were reviewed.

During the study period, there were 20 episodes of EMT dispatch. Notably, there were no EMT activations in 2012, 2017, and 2018. Most EMT patients were male (90% male, 10% female).

The nature of EMT activations was categorized as follows:

A. Prolonged rescue with patients entrapped for over 30 minutes: Motor vehicle crashes (45%), Severe industrial accidents (30%), Building collapses (5%).
B. No EMT activations were dispatched for Mass Casualty Incidents (MCI).
C. Other activations were escorting critically ill cross-border cases (20%).

In terms of discharge destination, 70% of patients were admitted to the hospital, while 30% unfortunately resulted in death. Maintaining vigilance and continuous training for the Emergency Medical Team (EMT) is essential, especially considering the small and uneven yearly numbers. Regarding the clinical training of EMTs, multiple government departments implemented preventive measures for black spots in motor vehicle collisions (MVCs), e.g., improving road infrastructure.

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Exploring the Challenges and Response Capabilities of DMAT in War Scenarios

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Summary: This study simulates a war scenario (acute disaster phase) to test the medical team's handling capabilities in a prolonged and complex environment. The exercise lasted 1.5 hours, with three patients entering the medical tent every five minutes. The results indicate several key findings:

1. Administrative Operations and Resource Management: Medical supplies were rapidly depleted within a short time, with a heavy reliance on paper records for documentation.
2. Response Capability to Large Numbers of Casualties: The exercise involved patients entering the medical station in small, repeated batches, which did not adequately simulate a scenario with a large influx of casualties.
3. Environmental Pressure Testing: Heavy metal music was used to simulate the noise and chaos of a real disaster scene, but it did not accurately reflect the true pressure sources encountered on the battlefield.
4. Safety Management: Insufficient safety management measures hindered the effective identification of dangerous items carried by evacuees, increasing potential risks, which is an important issue in war situations.
5. Continuity of Care: Due to disrupted transportation and depleted supplies, the medical team was unable to transfer and settle patients promptly, presenting new challenges for extended care.

Overall, this exercise reveals the multiple challenges faced by current medical teams and underscores the need to reassess DMAT's resource allocation and management strategies to enhance their response capabilities in real war environments. It also offers valuable insights for future exercise designs.

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Communication Strategies and Experience from the New Taipei Swift Search and Rescue Team during Typhoon Khanun, 2023, Nantou County, Taiwan

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Summary: On August 5, 2023, the impact of Typhoon Khanun in Ren'ai Township, Nantou County, central Taiwan, led to significant disaster situations. The New Taipei City Search and Rescue (SAR) Team was deployed to assist, working alongside the national SAR team and the local SAR teams from Nantou County and Taichung City Fire Departments for three days. This article explores the use of coordinated communication by the New Taipei SAR Team during the disaster relief efforts, aiming to enhance future rescue directions and strategies.

Coordinated communication is the process of utilizing various organizational resources to enable a group of individuals or teams with a common goal to work together more effectively and efficiently. The emergency response structure is organized hierarchically from top to bottom, including the Local Emergency Management Authority (LEMA), the Coordination Center, SAR teams, and rescuers. The flow of information between these levels consists of a downward path where higher-level units formulate and confirm plans before briefing lower levels, and an upward path where frontline units receive tasks, collect firsthand data on-site, analyze it, and report back to higher levels. This cycle of information flow continues until the mission is concluded.

The smooth operation of this communication model is facilitated by a network of diverse communication channels and equipment, including regular meetings or face-to-face

discussions, the use of computers and wireless networks, radios, smartphones, messaging apps, or email. Regardless of the chosen methods, having multiple communication channels is crucial for disaster response.

In summary, the experience of the New Taipei SAR Team during this rescue mission underscores the importance of coordinated communication in disaster response, providing valuable insights for future strategies to enhance rescue collaboration and resource utilization.

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Gaps in Perioperative Healthcare Delivery in the Month Following an Earthquake: A Systematic Review

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Introduction: Timely surgical care is key to mitigating earthquake-related morbidity and mortality. However, no comprehensive literature synthesis on post-earthquake perioperative service delivery exists to inform surgical services' disaster planning. This systematic review aims to identify gaps in healthcare delivery for patients undergoing surgery within a month after an earthquake.
Methods: The systematic review protocol was registered with the International Prospective Register of Systematic Reviews (CRD42023463920). Databases were searched from 2003 to August 21, 2023. Articles had at least one healthcare delivery gap for patients undergoing surgery within a month post-earthquake. A healthcare delivery gap was defined as instances where the care delivered is discrepant from what should ideally occur. Preliminary descriptive statistics and thematic analysis of healthcare delivery gaps were performed based on the Agency for Healthcare Research and Quality framework.
Results: Of the 1391 unique articles retrieved, 137 were included. There were 71 descriptive reports, 45 cross-sectional studies, 12 commentaries or editorials, four mixed-methods studies, 3 case reports, and 2 cohort studies. Twenty-seven different earthquakes in 13 countries were represented, with a minimum moment magnitude scale measurement of 6.1 and a maximum of 9.1. Fifty-three studies (38.7%) described utilizing a field hospital in their post-disaster relief efforts. Twenty-nine (21.2%) studies contained obstetric patients, and 89 (65.0%) studies contained pediatric patients. The most frequently reported surgical subspecialty was orthopedic surgery (83.9%). One hundred twenty-eight (93.4%) studies mentioned gap(s) in capacity, 55 (40.1%) in organizational structure, 12 (8.8%) in finances, 74 (54.0%) in patients, 98 (71.5%) in care processes and infrastructure, and 52 (38.0%) in culture.
Conclusion: Capacity was found to be the most impacted perioperative healthcare delivery domain following an earthquake. Findings of this systematic review can inform disaster planning of surgical and perioperative services.

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What Can an Emergency Medico-Psychological Unit Do to Assist a 17-Year-Old, Witness to the Homicide of His Sister and Victim of an Attempted Murder

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Summary: The Haute-Garonne Emergency Medical-Psychological Unit (CUMP 31), comprised of five health care professionals (two nurses, two psychologists, and one psychiatrist), provides urgent medical-psychological support for traumatic incidents.

In January 2024, CUMP 31 intervened following the homicide of a 16-year-old girl by her stepfather and the attempted murder of her 17-year-old brother, Marcel, who was a direct witness to the event. At the initial intervention, Marcel exhibited acute stress symptoms, including limb tremors, dissociative signs marked by an immediate lack of emotional responsiveness, and disrupted thought processes. Marcel benefited from a 48-hour phone follow-up, followed by three nursing consultations over several weeks. He was then transferred to another CUMP unit due to relocation.

This case exemplifies the CUMP 31's approach supporting direct witnesses of severe family trauma, highlighting the continuity of care from initial intervention to network-based reorientation. Over the past three years, CUMP 31 has conducted 46 immediate interventions (0-48 hours), 61 post-immediate interventions (48-72 hours), and facilitated 1,172 consultations within six months after the traumatic event, averaging three sessions per individual to treat acute stress and prevent post-traumatic stress disorder (PTSD).

Through Marcel's story, this case underscores CUMP's utility in managing urgent medical-psychological cases and the critical role of network coordination for the sustained support of victims and witnesses of severe traumatic events. Moreover, the increasing demand for CUMP 31's services in cases of intrafamilial homicide may reflect a rise in family-related violence or enhanced visibility of the CUMP system, leading to heightened utilization.

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EMT Coordination in the Gaza Humanitarian Crisis

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Summary: The Emergency Medical Team (EMT) initiative enhances rapid response to public health emergencies by mobilizing and coordinating national and international medical teams that

provide surge capacity. Since the escalation of hostilities in Gaza in October 2023, the local health system has faced severe challenges, including widespread infrastructure damage, critical shortages of medical supplies, and limited access to healthcare. In response, the World Health Organization, upon request from Gaza health authorities, activated the EMT mechanism and established an EMT Coordination Cell to support international deployment. By the end of 2024, 51 national and international EMTs were deployed across Gaza, addressing urgent healthcare needs in trauma care, surgery, maternal and child health, disease outbreak surveillance, non-communicable diseases, and mental health.

A total of 918 international and 242 national personnel delivered over 2.2 million general medical consultations, nearly 37,000 emergency surgeries, and more than 14,000 referrals. Two national EMTs have resumed activities, significantly strengthening local emergency care and specialized surgical capacity. In 2025, EMTs maintain their presence and impact despite major operational constraints, including insecurity, restricted access, and persistent shortages of essential supplies. Current priorities include reinforcing all levels of healthcare, expanding community and home-based services, strengthening disease surveillance, and increasing psychosocial support for both patients and health workers. Operational agility remains critical to respond to evolving needs, including hospital evacuations, displacement, and surges in casualties.

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Launch National Emergency Medical Teams while Responding to a Large Humanitarian Emergency: The Gaza Example

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Summary: Since hostilities escalated in Gaza in October 2023, the local health system has faced immense strain, marked by significant infrastructure destruction, shortages of medical supplies, and severely restricted access to healthcare for the affected population. In response, the World Health Organization (WHO) and Gaza health authorities activated the Emergency Medical Teams (EMT) mechanism, establishing an EMT Coordination Cell (EMTCC) to facilitate international deployment. By the end of 2024, 51 EMTs, including 918 international and 242 national staff, were deployed across Gaza, addressing urgent needs in trauma care, surgery, maternal and child health, non-communicable diseases, mental health, and outbreak surveillance.

These teams delivered over 2.2 million consultations, nearly 37,000 emergency surgeries, and more than 14,000 referrals. National EMTs play a vital role in ensuring rapid, locally adapted responses during crises. In 2021, two National EMTs were established in Gaza as core components of emergency preparedness. By September 2024,

Gaza National EMT #1 resumed operations, significantly contributing to the reopening of the Shifa Medical Complex, which was severely damaged during a two-week siege in April 2024. Key priorities for the team included pharmacy supply tracking, mass casualty management planning, and improved infection control standards. In February 2025, Gaza National EMT #2 was launched in the south, providing specialized surgical care in orthopedics, neurosurgery, and gynecology, with integrated rehabilitation and pain management services.

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EMT Initiative: Global Trends, Strategic Shift and WADEM Contribution

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Summary: In recent years, the world has witnessed increasingly complex emergencies: from natural disasters to armed conflicts, pandemics to mass displacement. These events do not respect borders, and they often stretch national response capacities to their limits. While international surge is essential to support systems when overwhelmed, strong national capacities and capabilities are the primary and most critical to a response. Strengthening the relationships between the two is the key to a strong global health response. The evolution of the EMT Initiative reflects a broader shift in emergency response thinking. No longer is it enough to send aid reactively or in isolation. Preparedness, response and resilience must refer to medical interventions that integrate standardized practices and mechanisms, respond with precision, coordination, and accountability. The WHO classification system for EMTs, and the broader global EMT Initiative, has enabled this by standardizing how teams are trained, equipped, and verified — ensuring that when they arrive on the ground, they are immediately functional and fit into existing command structures. WADEM and the EMT Secretariat commit to leveraging technical expertise, research capabilities, and evidence-based approaches to improve the delivery of timely, quality health services during crises. Key areas of cooperation include information sharing, joint research and analysis, support for national emergency plans, collaborative capacity-building activities, and the development and validation of training for the disaster medicine community, along with exploring innovations to improve emergency preparedness and response.

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Disaster Triage and Response in Multiple Simulated Critical Access Hospital Settings in Natural Disaster in Emergency Medicine Residents, Students, Nursing, Pharmacist and EMS Agencies

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Introduction: Mass casualty incidents (MCIs), including natural disasters, pandemics, multi-vehicle traffic accidents, and mass shooting events, are rare but are becoming a more routine encounter in emergency medicine. Training emergency medicine physicians for these events can be difficult given the incontinence of involvement during residency. Tools such as SALT (Sort, Assess, Lifesaving-interventions, Treat/Transport) triage have been developed to standardize response to MCIs, but can only be prepared to a degree of preparation. One way to improve training and education is through simulation, which provides a risk-free environment that can improve knowledge, clinical skills, and comfort with rare scenarios.
Methods: Surveys were obtained regarding familiarity and comfort with concepts and confidence in MCI management. A pre-survey was obtained before a 2-hour education, followed by a 2-hour disaster simulation with participants running EMS response, critical access hospitals with limited resources, and a tertiary referral center. Post survey data was collected following the education and simulation. Surveys were collected on Qualtrics using the Likert scale (1-5) with pre- and post-survey averages.
Results: All covered areas of training with familiarity and comfort in concepts improved by an average of 1.2 and 1.3 points, with the largest improvement seen on SALT Triaging (1.7, 1.8), Dry Decontamination (1.4, 1.6), and Wet-Decontamination (1.4, 1.6). Confidence metrics improved by an average of 1 point, with the largest improvements in Role Assigning (1.18) and Transfer Decisions (1.11).
Conclusion: Our education and simulation event led to a modest increase in comfort for MCIs. Health systems surge planning, hospital-staging, and SALT triaging had the most improvement in both familiarity and comfort, with averages of 1.4, 1.4, and 1.75 points, respectively. There was also improvement in confidence for resource distribution, role assigning, and transfer decisions. This reinforces that simulation events are an effective way of educating in a risk-free environment, especially for rare health care practices.

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Rapid Development and Implementation of Software for Managing Treatment, Evacuation, and Diagnostic Data of War Casualties: the "Golden Watch" System - From Concept to Reality in Weeks

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Introduction: During the recent war in Israel, thousands of soldiers sustained injuries, and hundreds lost their lives. The army was required to maintain precise data on the injured and deceased, detailing the nature and location of injuries, the hospital to which a patient was transported, the vehicle used for transportation, and the time of injury, to support operational decision-making. This study presents the rapid and professional process undertaken by the IDF's Southern Command to establish the "Golden Watch" system, which compiles and displays all this data.
Methods: The study employed a mixed-methods approach. The quantitative analysis involved examining data collected by the system and comparing it with information from hospitals, medical teams, and commanders' reports. The qualitative component included interviews with six senior officers to assess their satisfaction and perspectives on the system.
Results: The quantitative analysis determined that the system's reliability is exceptionally high, with data accuracy exceeding 99% across all tested aspects, including the nature of the injury, injury date, injury location, evacuation destination, and evacuation method. The qualitative findings revealed three key themes: the system's simplicity is a significant advantage, its primary disadvantage is its reliance on manual input, and its unique capability to present a comprehensive overview of broad statistics is essential.
Conclusion: This research demonstrates that adapting to leverage advanced technologies during a mission is possible and necessary. The "Golden Watch" system provides a model that can be readily implemented in hospitals, military forces, and other organizations worldwide. By enhancing the comprehensive situational picture, this system has the potential to significantly improve decision-making and operational effectiveness in crisis response and emergency management contexts beyond the military domain.

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Advanced Techniques in Prehospital Ultrasound (Real-World Application of Prehospital POCUS and Effects on Patient Care)

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Summary: The role of Point-of-Care Ultrasound (POCUS) continues to expand in the prehospital environment, with more services adopting this technology to facilitate earlier diagnosis

and treatment. While this technology has been used in Helicopter EMS for over a decade, it has only recently entered the ground EMS arena. In the United States, fewer than 10% of EMS agencies have POCUS programs, with most use in air EMS services. As portability, durability, and cost have improved, it has allowed this technology to be utilized in several life-saving areas. This, coupled with the increasing literature base demonstrating the ability of paramedics to perform POCUS with accurate interpretation, has opened the possibility of its use in this space. Significant applications in the prehospital environment include identifying life-threatening traumatic injuries such as pneumothorax, cardiac tamponade, and abdominal bleeding, as well as differentiating heart failure from COPD in critically ill patients with respiratory distress. Furthermore, POCUS can be used in early assessment of ROSC in cardiac arrest, as well as determining hemodynamics and volume status to guide resuscitation. This case series will focus on various clinical scenarios from a large urban ground EMS service that has adopted POCUS in its agency. The case series will include differentiating causes of dyspnea, identification of traumatic injuries, and its use during cardiac arrest management. We will highlight how POCUS was utilized in this setting and how care was changed based on the POCUS findings.

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Advanced Forecasting of Military-Targeted Terrorism Using Time Series Analysis

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Introduction: Military-targeted terrorism poses a persistent threat to global security, impacting national defense and international stability. Accurate forecasting of such incidents is crucial for developing effective counter-terrorism strategies. This study leverages advanced time series analysis to predict future trends in military-targeted terrorism incidents, providing insights for policymakers and military strategists.
Methods: This study utilizes historical data from the Global Terrorism Database (GTD) from 1970 to 2020 to forecast incidents from 2021 to 2030. Three predictive models, such as ARIMA, Random Forest, and Long Short-Term Memory (LSTM) networks, were employed to capture patterns and predict future incidents. Model performance was evaluated using Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and R-squared (R^2) metrics. The LSTM model was further optimized through hyperparameter tuning to enhance prediction accuracy.
Results: The LSTM model demonstrated superior performance compared to ARIMA and Random Forest models. Specifically, the LSTM achieved an MAE of 10.2 and an RMSE of 12.5, with an R^2 value of 0.82, indicating a strong fit and predictive capability. The ARIMA model recorded an MAE of 12.3 and RMSE of 14.8, while the Random Forest model had an MAE of 15.7 and RMSE of 18.2. The forecasts revealed an increasing trend in military-targeted terrorism incidents over the next decade, with predicted peaks of 65 incidents in 2022 and 71 incidents in 2023.
Conclusion: Integrating LSTM networks with traditional time series models enhances the predictive accuracy of military-targeted terrorism forecasts. These insights enable policymakers to allocate resources effectively, plan strategic interventions, and improve preparedness against potential threats. Future research should incorporate additional data sources, such as social media analytics and geopolitical factors, to refine predictions and enhance situational awareness. This study underscores the importance of leveraging advanced machine learning techniques to address complex security challenges.

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Remote Stroke Evaluation: NIHSS Certified Paramedics Using a Video-Enabled App for Prehospital Assessment and Remote Hospital Consultation

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Introduction: Early prehospital identification of stroke and triage to the right level of care may result in more patients receiving acute treatment. Approximately 25% of patients in Denmark receive revascularisation after an acute stroke. Further, 20 % of patients with stroke are not being recognized by paramedics when assessed on scene in a telephone conference with the stroke centre.

Accurate prehospital stroke identification is critical for treatment and patient outcomes. The National Institutes of Health Stroke Scale (NIHSS) is an established tool for assessing stroke severity, but it is not commonly used by paramedics. In this study, paramedics are using an app to assess the patient, guiding the paramedic through the NIHSS, while each step is documented in a short video, which is transferred to the centralized stroke center.
Methods: A stepped wedge randomized trial is performed, with paramedics being the subject which is randomized. First, paramedics are enrolled in October 2024. Data collection is terminated in December 2025. A paramedic in an intervention cluster uses a mobile app for patients with suspected stroke, recording videos of patients. The app analyses the videos, highlighting potential stroke predictors. Recorded videos and NIHSS scores are transmitted to the stroke center for thrombolysis decision-making. In the control group, standard procedures are followed.
Results: The primary outcome measure is for prehospital recognition of patients with acute stroke, defined as the proportion of patients accepted for stroke evaluation and discharged with a final stroke diagnosis. A power calculation yields that no less than 1200 patients will be enrolled in each arm of the trial for 95% power to detect a 5% improvement, with 85% sensitivity assumed in the control group.

Conclusion: The results will show the intervention's potential to improve stroke recognition rates and its ability to reduce on-scene times.

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Challenges and Necessity of Systematization in the Maintenance of Mobile Medical Containers During the Noto Peninsula Earthquake in Japan

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Introduction: On January 1, 2024, the Noto Peninsula earthquake struck, causing significant damage, particularly in the Oku Noto region. The Japanese government, through relevant agencies, deployed medical containers. However, many challenges emerged in the deployment of these medical containers due to the lack of maintenance and systematization. This study aims to clarify the challenges in the maintenance of mobile medical containers during disaster operations and the necessity of systematization.
Methods: This study examines the "Report on the Deployment and Operation of Medical Containers During the 2024 Noto Peninsula Earthquake," along with field surveys and interviews with the maintenance team.
Results: The maintenance team patrolled daily for two months to maintain the scattered containers in the disaster area. However, they faced extreme difficulties, such as road collapses due to the earthquake, snowfall, snow accumulation, low temperatures, and long-distance travel. Additionally, securing personnel was challenging.
Conclusion: There is an urgent need to establish an operational system for mobile medical containers. Maintenance tasks, such as checking fuel levels of generators, monitoring container tilt, inspecting external and internal damage, and assessing snow accumulation at the installation sites, should be measured by sensors. Integrating this data into the operational system and visualizing it is necessary to reduce the burden on the maintenance team.

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Rapid Response to the Surge of Non-Standard Medical Records in Catastrophic Events Using Multimodal Information Processing and AI-Driven Natural Language Processing

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Introduction: Major public health emergencies generate a surge in non-standard medical records, which challenge efficient patient care and data management. Handwritten or incomplete records, along with simplified Hospital Information Systems (HIS), struggle to manage the surge in patient data, leading to incomplete, unstructured, and difficult-to trace records. This study explores the use of AI and NLP to standardize and manage these records during disasters.
Methods: A deep learning-based system using pre-trained NLP models such as BERT and T5 is being developed. The system extracts and standardizes patient information, symptoms, and treatment details. Training will occur within the world's only non-military, WHO-certified Type 3 International Emergency Medical Team (EMT), utilizing a large dataset from high-risk natural disaster areas in Southwest China (sourced from publicly available or open-source databases). The evaluation will focus on handling diverse and unstructured data and employing metrics such as precision, recall, and F1 score.
Results: Initial testing shows promising outcomes, with the system demonstrating its potential to extract and standardize key medical information. Further validation is needed to ensure real-world reliability.
Conclusion: AI and NLP present a promising solution for managing non-standard medical records in disaster medical rescue. Automating record standardization can enhance emergency response efficiency and improve patient outcomes. Future work will aim to enhance real-time data collection, integrate the system into daily prehospital and emergency care, and collaborate with experts to refine the system.

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Enhancing Pediatric Disaster Preparedness: The Role of Social Media in Engaging Families and Hospitals

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Introduction: Social media has become a crucial source of information for families, particularly during disasters when parents seek quick updates regarding loved ones and after a disaster for future planning. In response, Region V for Kids, a Pediatric Disaster Center of Excellence funded by the United States Administration for Strategic Preparedness and Response, formed a Communications Workgroup to disseminate disaster-related content via social media. This study evaluated whether the Region V for kids' website user engagement with hospitals and families improved after leveraging social media for disaster content.
Methods: This retrospective study, conducted from January to August 2024, analyzed user engagement metrics from the Region V for Kids website. Metrics included landing page views, active users, average engagement time, and bounce rates. These were compared against benchmarks from significant events, such as forming a dedicated communications team, hiring a communications specialist, and posting educational resources during disasters.
Results: After establishing the Communications Workgroup and hiring a communications specialist, user engagement

improved significantly. Average engagement time increased from 5 to 26 seconds, while bounce rates decreased from 49% to 15%, indicating greater user interest. Although overall views and active user counts showed variability, there were notable increases following the Ohio Tornado Outbreaks in May 2024, demonstrating responsive engagement during critical events.

Targeted social media posts also positively impacted engagement. A May 2024 social media post on disaster preparedness for individuals with disabilities resulted in a six-fold increase in relevant webpage views. Similar trends were observed for family reunification, hazard vulnerability analysis, and pediatric medical operations coordination cell.

Conclusion: Social media has emerged as a vital tool for efficiently disseminating critical information, particularly during disasters. Region V for kids successfully utilized these platforms to enhance engagement and promote pediatric disaster preparedness best practices among families and hospitals.

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Debriefing Disasters-It's Not Just for Disaster Experts or Just for After Disaster: AI Can Optimize Disaster Preparedness and Response and Debriefing for All

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Summary: With increasingly frequent disasters, including public health emergencies and mass casualty events, impacting and disrupting usual practice, disaster preparedness and response competency are critical for hospital and prehospital clinicians, support staff, and administrators, most of whom lack formal disaster training. Clinical event debriefing (CED), often referred to as hot wash, cold wash, and after-action reporting by disaster and military professionals, is a valuable quality improvement (QI) tool for improving disaster management. Artificial intelligence (AI) can inform disaster-specific content not only for post-event debriefing, but also to guide and optimize preparedness and response before, during, and after a disaster. Disaster experts and WADEM, as an association, play crucial roles in establishing AI best practices and educating individuals, including those without formal disaster training, on opportunities, challenges, strategies, and effective prompts for using AI to optimize disaster-specific patient management, healthcare system utilization, and provider well-being.

This session will address considerations for the use of AI for:

1. Identifying disaster-specific, clinical setting-specific, and patient-specific topics, including activation, staff, space, stuff, processes and workflows, triage, tracking, decontamination, infection control, evaluation and management of specific patients and groups of patients, disposition, reunification, ethical/legal considerations, roles, and team building across professions and specialties.
2. Creating debriefing scripts before CED and using video capture and analysis of events to identify debriefing considerations and topics for hot and cold debriefs based on actual clinical events.
3. Generating debriefing reports and strategies to convert actionable items into actions. 4. Collecting, analyzing, and using data, including in real-time to dynamically guide disaster clinical decision support and allocation of healthcare system resources, and to create just-in-time educational resources.

As AI continues to evolve and opportunities for use and continues to expand within and beyond healthcare, AI will no doubt optimize management across all phases of disaster.

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Performance Comparison Experiment of a Newly Developed Adjustable Descent Stretcher for Emergency Staircases and Other Transport Methods

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Introduction: The development of a stretcher for transporting individuals with mobility difficulties or bedridden patients down stairs during elevator stoppages caused by earthquakes or fires is an urgent task. This time, performance tests of the prototype were conducted, and the results of these tests will be reported. To clarify the effectiveness of the developed stretcher by comparing it with other transport methods.

Methods: Comparative transport experiments were conducted using the prototype stretcher, a tarpaulin stretcher, and an air stretcher.

Results: Transport experiments were conducted over a distance of 92.6 meters from the hallway on the 5th floor of a building to the lobby on the 1st floor. To transport one person, the prototype required one transporter, the tarpaulin stretcher required three transporters, and the air stretcher required two transporters. The transport time was shortest with the tarpaulin stretcher, followed by the air stretcher and the prototype. In addition, only the prototype was able to provide side space for others to evacuate the staircase during the descent experiment. Furthermore, the prototype machine showed the least change in the heart rate of the person being transported.

Conclusion: The experiment results showed that the prototype could be operated by a single transporter, whereas other methods required multiple transporters. Although the speed was slower than other methods due to the difference in the number of transporters, it was faster than the average walking speed of elderly individuals. Moreover, the prototype ensured space for evacuees to pass during the descent. Additionally, the prototype imposed the least burden on the transported person.

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Challenges and Solutions in Selecting Locations for Medical Container Deployment during the Noto Peninsula Earthquake in Japan

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Introduction: On January 1, 2024, a magnitude 7.6 earthquake struck the Noto region in Ishikawa Prefecture, Japan. The earthquake recorded a maximum seismic intensity of 7 and a tsunami height of 5 meters, causing extensive damage across various areas. In response, the government, through relevant agencies, arranged and deployed mobile medical containers for medical support. However, determining the locations for these containers proved to be extremely challenging. This study identifies the factors and challenges in the location selection process and examines a pre-designated site selection system as a solution.
Methods: To organize and examine the "Report on the Deployment and Operation Status of Medical Containers during the 2024 Noto Peninsula Earthquake" by the Ministry of Health, Labour and Welfare's Koido Research Group and the National Resilience Promotion Office, and field survey results.
Results: During the Noto Peninsula earthquake, selecting locations for medical containers required understanding the medical needs of the affected areas, identifying candidate sites, and meeting installation conditions, including area, ground strength, ground conditions, access routes, and road conditions. These tasks were not only extremely challenging but also time-consuming, leading to discrepancies with the actual needs, which became a significant issue.
Conclusion: Based on this experience, it is desirable to pre-select and database potential sites and transport routes for mobile medical containers during normal times, utilizing GIS to visualize this information, in preparation for large-scale disasters such as the anticipated Nankai Trough megaquake.

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Development of a Disaster Welfare Simulation to Enable Policy Consideration

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Introduction: Japan faces a high risk of disasters, and its aging population has led to an increase in vulnerable individuals, such as the elderly and people with disabilities. During disasters, these individuals often fail to receive adequate support, leading to deteriorating health and functional decline. Furthermore, many welfare facilities supporting them are privately operated, making it difficult to sustain services due to facility damage or caregivers' inability to work. This situation exacerbates the health risks for vulnerable populations who require welfare services but are unable to receive sufficient support. To address these issues, it is crucial to examine policies that ensure efficient and sustainable welfare service provision. This study aimed to develop a simulation model for systematically planning disaster welfare support for vulnerable populations, enhancing the accuracy of policy consideration.
Methods: This study developed an agent-based model (ABM) to simulate individualized care plans, coordination among welfare facilities, and collaboration with medical institutions. The model incorporated human resource allocation, shelter operations, and the timing of supply provision across multiple scenarios designed to support vulnerable populations during disasters. Regional characteristics and policy implementation timing were considered to evaluate the scenarios' effectiveness from multiple perspectives. This approach enabled a comprehensive evaluation of broad support activities, including coordination between welfare facilities and medical institutions, efficient resource allocation, supply provision, and shelter management.
Results: The simulation model evaluated multiple scenarios for human resource allocation and shelter coordination, quantitatively assessing the impact of geographical conditions and policy timing on vulnerable populations. By applying statistical and optimization methods, the study identified optimal parameters for the simulation, enabling the design of effective disaster welfare policies.
Conclusion: The developed simulation model is a valid tool for evaluating the effectiveness and validity of disaster welfare policy considerations. It is also applicable for education and training, offering broad utility in practical settings.

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Augmented Reality–Virtual Reality Wartime Training of Reserve Prehospital Teams

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Introduction: In the realm of trauma response preparation for prehospital teams, the combination of Augmented Reality (AR) and Virtual Reality (VR) with manikin technologies is growing in importance for creating training scenarios that closely mirror potential real-life situations. The study focused on training in airway management and intubation for trauma incidents, based on a Trauma AR-VR simulator involving reserve paramedics of the National EMS service (Magen David Adom) who had not practiced for up to six years, activated during the Israel-Gaza conflict (October 2023). The trauma simulator merges the physical and virtual realms by utilizing a real manikin and instruments outfitted with sensors. This integration enables a precise one-to-one correspondence between the physical and virtual environments.
Methods: A quantitative questionnaire was utilized to gauge the influence of AR-VR training on specific psychological and skill-based metrics, including self-efficacy, resilience, medical knowledge, professional competency, confidence in performing intubations, and the perceived quality of the

training experience. The methodology entailed administering a pre-training questionnaire, delivering a targeted 30-minute AR-VR training session on airway management techniques, and collecting post-training data through a parallel questionnaire to measure the training's impact.
Results: Post-training evaluations indicated a significant uptick in all measured areas, with resilience (3.717±0.611 to 4.008 ±0.665) and intubation confidence (3.541±0.891 to 3.833 ±0.608) showing particularly robust gains. The high rating (4.438±0.419 on a scale of 5) of the training quality suggests a positive response to the AR-VR integration for the enhancement of medical training.
Conclusion: The application of AR-VR in the training of reserve paramedics demonstrates potential as a key tool for their swift mobilization and efficiency in crisis response. This is particularly valuable for training when quick deployment of personnel is necessary, training resources are diminished, and 'all hands on deck' is necessary.

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Effectiveness of Smartphone Application for Alert Accessibility Among Hearing-loss Population During the "Iron Swords" War

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Introduction: According to the World Health Organization, over 5% of the world's population –430 million people have hearing loss. It is estimated that by 2050, over 700 million people will have disabling hearing loss. In emergencies and disasters, alerts are predominantly transmitted through sound channels, posing significant challenges for the hearing-loss population. Ensuring accessible alert systems for this population is crucial. The recent "Iron Swords" war prompted the Israel Home Front Command to implement an accessible app that combines sound, vibration, and light alerts alongside traditional auditory warnings.

This study aimed to evaluate the effectiveness of the alert application among individuals with hearing loss and identify factors influencing alert accessibility.
Methods: A cross-sectional survey with accessible Hebrew was conducted from October 17 to November 30, 2023 (ten days after the war started) via the Qualtrics platform. The survey targeted individuals with hearing loss, including deaf people, hard-of-hearing individuals, and those with or without cochlear implants or hearing aids.
Results: The study included 167 participants with hearing loss, of whom 52.1% (n = 87) self-identified as deaf persons and 43.7% (n = 73) as hard-of-hearing. Among the participants, 127 reported using cochlear implants and/or hearing aids. During daytime hours, approximately 69.46% of participants received warnings from the alert app (via sound, light, or vibration), compared to only 32.34% during nighttime hours. Notably, almost half of the participants (43.1%) reported not receiving alerts from the app at night. In response, about 47.31% of participants rely on family members as an alternative source of alerts.
Conclusion: This application demonstrates effectiveness in delivering daytime alerts to individuals with varying degrees of hearing loss. However, its efficacy significantly diminishes during nighttime hours, regardless of hearing status. These findings highlight the need for developing more robust solutions for nighttime alert accessibility among populations with hearing loss.

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AI-Enhanced Network Analysis of Terrorist Groups Targeting Military Entities: Identifying Key Interconnections and Disruptive Strategies

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Introduction: The growing threat of terrorism against military entities necessitates a comprehensive understanding of terrorist networks to develop effective counter-terrorism strategies. This study employs advanced network analysis and artificial intelligence (AI) to explore interconnections and influence within these networks. AI tools, including machine learning algorithms and natural language processing, identify critical nodes and propose strategic interventions that enhance public safety and health.
Methods: Data from the Global Terrorism Database from 1970 to 2020, focusing on incidents involving military targets, were analyzed using centrality measures and hierarchical clustering to identify influential nodes and vulnerabilities. Specific AI techniques, such as supervised learning models for pattern recognition and natural language processing for threat language detection, were integrated to improve threat detection and automate responses. Ethical considerations regarding data privacy and algorithmic transparency were prioritized throughout the analysis.
Results: The analysis identified key nodes such as the Taliban, ISIL, and Al-Qaeda, with degree centrality scores of 0.80, 0.75, and 0.65, respectively, highlighting their significant influence across the network. Quantitative metrics revealed that regions such as Iraq and Afghanistan serve as operational hubs, with eigenvector centrality scores above 0.85, indicating them as strategic targets for disruption. AI-enhanced threat detection demonstrated a 30% improvement in accuracy, increasing from 70% to 91%, significantly reducing false positives from 20% to 7%, and enabling proactive interventions. Targeting high-centrality nodes within the network's scale-free structure could reduce operational capacity by 40%, effectively diminishing threats.

Conclusion: The integration of network analysis and AI technologies reveals crucial insights into the structure and dynamics of terrorist networks. Targeting key nodes and vulnerabilities allows policymakers to develop strategies to disrupt terrorist activities and enhance public safety. AI-driven tools significantly improve threat detection and response, offering transformative potential in counter terrorism. Policymakers should address data privacy and algorithmic bias and incorporate these insights into security strategies to enable effective threat responses.

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First Responder Assistance in Managing Major Incidents: Assessing the Potential of Smartphone Alerting Systems to Provide Support–Findings from a Model Region in Germany

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Introduction: The activation of volunteer first responders (VFR) near out-of-hospital cardiac arrests is recommended by current guidelines. Advanced smartphone alerting systems (SAS) alert registered medical professionals who are able to arrive at the scene before emergency services. In addition, these systems could potentially inform, dispatch, and enable VFR to provide quick, accurate reports during major incidents or disasters. This study evaluates the potential of using SAS for major incidents by retrospectively examining performance criteria of the "Region of Lifesavers" system.
Methods: In this retrospective study, the "Region of Lifesavers" system was analyzed in August 2024 in the Freiburg region (1,531 km^2, 493,036 population). The analysis focused on the number, profession, and availability (acceptance, distance) of VFR. Descriptive analysis of the system's operation data was conducted using Microsoft Excel Business (v2408). The study was approved by the Ethics Committee Freiburg (No: 23-1450-S1).
Results: A total of 1,657 VFR were registered in the system, equipped with basic medical equipment. Their affiliations were: EMS (663), hospital staff (381), medical students (114), firefighters (103), police with medical qualification (90), mountain rescue (57), physicians (53), admins (13), and others/unknown (183). Of the 127 alerts, 89 (70%) were accepted by at least one VFR. On average, 20 VFR were in the pre-alert area within five kilometers of the scene. The median airline distance from VFR to the scene was 628 m (IQR 1042 m, N = 156).
Conclusion: The study demonstrates adequate availability and geographical coverage of VFR with professional qualifications. The high alert acceptance rate indicates a strong willingness to participate in operations. With further technological advancements, the system could play a promising role in supporting the management of major incidents in the future. Appropriate app features should be designed and developed to facilitate subsequent practical testing.

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The Utility of GFAP and UCHL-1 in Mild Traumatic Brain Injury

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Introduction: Mild Traumatic Brain Injury (mTBI) affects millions of people worldwide each year and significantly impacts the healthcare system. Clinical criteria and computed tomography (CT) scans are used for diagnosis. The Glial Fibrillary Acidic Protein (GFAP), a protein present in glial cells, and the ubiquitin C-terminal hydrolase L1 (UCH-L1), localized in neurons, are biomarkers that have been approved to help determine the need for CT brain scans after traumatic brain injury.
Methods: This study was performed in the emergency department of the Municipal Clinical Hospital of Timisoara, Romania. Inclusion criteria consisted of all patients with mTBI admitted for 3 months with a brain CT, over 18 years of age, and with a Glasgow Coma Scale score between 13 and 15 at admission. Biomarkers were collected within a maximum of 12 hours of trauma.
Results: Of the 145 patients admitted with mTBI, 106 met the inclusion criteria, of whom 56 (52.83%) were men and 50 (47.17%) were women. Demographic characteristics between groups were similar. Males had a median age of 66 years [range 20-89], and female patients had the same 66 [range 19-94] ($p = 0.986$). The median for UCHL-1 (cut-off was 400 pg/ml) was 495.4 for females and 690.7 for males. For GFAP (cut-off was 35 pg/ml), there was a median of 60.9 for females and 58.3 for males. Higher values of these biomarkers were positively correlated with complications on brain CT ($p < 0.001$ for both).
Conclusion: Male patients showed significantly higher concentrations of UCHL-1 than females. This study demonstrates that elevated values of the two biomarkers are correlated with specific lesions on CT scans after mTBI and may play an essential role in determining whether or not emergency CT scans should be performed.

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Applications of Artificial Intelligence Guided Clinical Decision Support in Disaster Medicine: A Delphi Study

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Introduction: The rapid evolution of technology has spurred diverse applications in medicine, including clinical decision support. Despite numerous studies validating the potential of AI-assisted clinical decision support (AI-CDS), the desired applications by Disaster Medicine clinicians remain unclear. This study aims to address this gap through consensus-building research with international disaster medicine experts.

Methods: Using the traditional Delphi method, an international panel of disaster medicine practitioners was assembled. An open-ended questionnaire in Round 1 elicited prospective consensus statements on AI-CDS applications. These responses were organized into consensus statements for subsequent rounds. A 7-point linear numeric scale was employed in Round 2 to rank the statements. Statements with a standard deviation of 1.0 or less were considered consensus. Results from Round 2 will be shared with each expert, and they will be asked to reconsider their ranking as part of Round 3. An interim analysis will be conducted to determine if a 4th round is necessary. Statements that pass the consensus cutoff in either rounds 3 or 4 will be included in the final analysis.

Results: In Round 1, 539 statements were obtained from 77 participants (38% female; 62% male) across 47 countries representing all 7 World Bank Global Regions. Key concerns included triage, training, communication, mental health, organization, and disaster planning. These proposals were condensed into 47 statements for Round 2, with 56 participants completing their assessment so far. Statements scoring above 5.7 out of 7 highlighted AI support would be beneficial in estimating population at risk, disaster medicine training, resource coordination, HVA assistance, surge capacity, patient distribution, and enhancing culturally sensitive and multilingual communication.

Conclusion: This Delphi study highlights the varied and critical applications of AI-CDS desired by disaster medicine experts. The findings will provide a foundation for future research and innovation, aligning AI development with the priorities of disaster medicine practitioners.

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Blood Supply Chain Management in Emergencies: Strategies for Resilience and Responsiveness

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Introduction: The increasing frequency and severity of natural disasters and humanitarian crises pose considerable problems to healthcare systems, particularly in terms of blood supply management. Effective blood supply chain management is critical for assuring timely access to blood products during crises, when transfusion demand increases due to trauma and mass casualties.

Methods: A comprehensive review of literature and case studies from past emergencies was conducted to assess current practices in blood supply chain management. Key strategies were categorized according to the four phases of emergency management. In addition, interactions with stakeholders from blood banks, hospitals, and emergency services were conducted to get insights into effective coordination and resource mobilization.

Results: The results show that improving blood availability during emergencies requires proactive donor engagement initiatives, integrated communication systems, and coordination with emergency management organizations. Operational efficiency is greatly increased by proactive mitigation techniques like keeping stable inventory and readiness measures like interagency communication and catastrophe response plans. 'Walking blood banks' and drone delivery systems are examples of innovative response-phase solutions that meet urgent transfusion needs. The recovery phase underscores the importance of strategic planning for restoring services and sharing resources among healthcare providers.

Conclusion: A coordinated and proactive approach to blood supply chain management across all phases of emergency management is essential for improving responsiveness during crises. By implementing the identified strategies, healthcare systems can ensure the availability of life-saving blood products when they are needed most, ultimately enhancing patient outcomes in emergencies.

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Novel Use of Microsoft Teams in Health Care Disaster Response: Enhancing HICS Communication and Beyond

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Summary: Effective Hospital Incident Command System (HICS) communication is critical for maintaining situational awareness and ensuring coordinated responses to disasters. Traditional tools, such as radios, phones, email, and, more recently, online platforms like Zoom, often lack the secure, HIPAA-compliant, and streamlined functions needed for complex health care incident management. Microsoft Teams offers a unified platform with document sharing, teleconferencing, real-time messaging, and scheduling capabilities, making it well-suited to support HICS operations. Additionally, given its widespread Health Organization enterprise use, many individuals on health care teams use it on a daily basis for routine care, allowing for a lower threshold for adoption and familiarization.

Two recent scenarios highlighted its novel use and demonstrated its effectiveness. First, in a full-scale hospital exercise that activated the High Consequence Pathogen team, including transport, the Emergency Department, inpatient units, the laboratory, environmental services, and local partners, Microsoft Teams served as a virtual command center. Its use enabled rapid dissemination of information, improved communication across departments, and promoted shared situational awareness.

Second, during the American Airlines crash at Ronald Reagan Washington National Airport (DCA) in January 2025, Microsoft Teams was employed to activate and coordinate the anticipated ICU disaster response. The platform enabled leaders to quickly connect, allocate resources, including staffing, and maintain real-time updates during a high-acuity event, underscoring its value in real-world emergencies.

Key lessons from both experiences include the importance of pre-establishing contact lists, enabling device alerts for timely notifications, and training staff in the use of Microsoft Teams for incident response. Familiarity with the Microsoft platform, combined with its accessibility across desktop and mobile devices, enhances communication efficiency and collaboration. Microsoft Teams proved to be a practical and effective tool for strengthening HICS, with potential for further refinement through health care-specific customization.

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Enhancing Disaster Medical Response Efficiency with Mobile Application iDMAT: A Case Study of Hualien DMAT

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Introduction: Effective disaster medical response hinges on timely data management and efficient resource allocation. The Hualien Disaster Medical Assistance Team (DMAT) in Taiwan functions as a mobile emergency department during disasters, integrating resources from health bureaus, emergency centers, hospitals, and private organizations. Previous disaster responses revealed significant challenges in data capture and real-time management; reliance on frequent calls and messages led to information errors, overburdened medical staff, and diminished rescue efficiency.
Methods: To address these issues, Hualien DMAT developed the iDMAT system, a digital platform designed to simplify medical record keeping and data management during disaster response. The user operates the application downloaded on the mobile phone. Feedback and operational data from users have been collected during exercises since 2023 and during the Hualien earthquake on April 3, 2024.
Results: Implementation of the iDMAT system significantly improved operational efficiency. The team members reduced the average medical record completion time from 5.89 minutes (paper-based) to 2.68 minutes, achieving a 45% reduction. Approximately 78.57% of records were completed within 2–3 minutes. Data integration time decreased dramatically from 35.91 minutes to 6.80 minutes, with 70% of cases integrated within 3 minutes—a fivefold increase in efficiency.
Conclusion: By providing accurate and timely data to government agencies, the iDMAT system enhanced on-site medical care and resource allocation, facilitating rapid decision-making and resource deployment. These improvements led to better patient outcomes and reduced mortality during disasters. The system is scalable to other out-of-hospital care scenarios, such as major accidents and large-scale events. Future developments include integrating international standards like FHIR to promote cross-border collaboration and establishing a seamless care continuum among hospitals, fire departments, and ambulances.

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TrackMi Montérégie Project: A Real-Time Digital Prehospital Data Collection and Analysis Tool for Use During Multi-Casualty Incidents and for Routine Hospital Fluidity Optimization

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Introduction: Technology has the potential to improve patient tracking, communications, and management during major events. To ensure optimal use of a digital casualty traceability tool in a "disaster situation," it is important to train paramedics to use it during routine activities. Hence, in partnership with an EMT technology firm, CISSS de la Montérégie-Centre established the TrackMi Montérégie project.

Methods: An existing digital mobile tool designed for rapid exchange of critical information in multi-casualty incidents (MCI) was modified to also collect routine prehospital data to optimize clinical trajectories. The application supports geolocation of patients en route to the hospital and a secure web-based platform for real-time data analysis. As a pilot project (July-December 2024), paramedics in Montérégie voluntarily collected prehospital data into the TrackMi database.
Results: Preliminary TrackMi data analysis revealed that paramedic transport priority (11% urgent, 10% immediate, 79% non-urgent) differed significantly from call center (CCS) ambulance assignments (44% P1-Immediate/Urgent, 42% P3-Immediate). TrackMi distribution for age (20% 85+, 65% 65+, 11% 65-, 3% n/a), gender (57% female, 43% male, 0% other) and Medical Priority Dispatch System (MPDS) complaints (27% 26-Sick person, 16% 17-Falls, 11% 6-Breathing difficulty, 8% 10-Chest pain) matched CCS data. However, TrackMi MPDS assessment by paramedics differed from CCS MPDS data in 37% of cases. In a subgroup analysis (85+), results showed that a majority of patients had a short stay in the emergency room without hospitalization (59%), and TrackMi MPDS better matched the hospital final diagnosis category.
Conclusion: Optimal hospital management depends on its alignment with prehospital resources and the timely transfer of validated information during MCI events and routine operations. As the health system faces many challenges, including aging populations, scarcity of ambulance resources, and lack of personnel and hospital beds, digital tools are increasingly required to assist in the real-time analysis of prehospital data, improve clinical trajectories, and hospital fluidity.

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Implementation of Remote-Sensing Models to Identify Post-Disaster Health Facility Damage: Comparative Approaches to the 2023 Earthquake in Turkey

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Introduction: Identifying health facility damage following disasters is crucial, but ground-based evaluations require substantial time and labor. Remote-sensing artificial intelligence (AI) models trained on satellite imagery can estimate building damage, and could be used to generate rapid health facility damage reports. There is little published methodology for generating these estimates, testing real-world accuracy, or exploring error sources. This study presents a novel method of overlaying model damage outputs with health facility location data to generate health facility damage estimates following the February 2023 earthquake in Turkey. Two models were compared for agreement, accuracy, and errors.
Methods: Building-level damage estimates were obtained for Model A (Microsoft neural network model) and Model B (Google AI model), and overlaid with health facility location data to identify facilities with significant damage. Model agreement, sensitivity, and specificity for damage detection were calculated. A descriptive review of common error sources based on selected satellite imagery was conducted. A spatially aggregated damage estimation, based on a proportion of buildings damaged in a 0.125 km^2 area, was also generated and assessed for each model.
Results: Twenty-five hospitals, 13 dialysis facilities, and 454 pharmacies were evaluated across three cities. Estimated damage was higher for Model A (10.4%) than for Model B (4.3%). Cohen's kappa was 0.32, indicating fair agreement. Sensitivity was low for both models at 42.9%, while specificity was high (A: 93.6%, B: 96.8%). Agreement and sensitivity were best for hospitals. Common errors included inaccurate building identification and underestimation of damage for destroyed buildings. Spatially aggregated damage estimates yielded higher sensitivity (A:71.4%, B:57.1%) and agreement (Cohen's kappa 0.38).
Conclusion: Leveraging remote-sensing models for health facility damage assessment is feasible, but currently lacks the sensitivity to replace ground evaluations. Improving building identification, damage detection for destroyed buildings, and spatially aggregating results may improve the performance and utility of these models for use in disaster response settings.

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Real-Time Triage, Position, and Documentation (TriPoD) During Medical Response to Major Incidents

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Introduction: In mass-casualty incidents (MCIs), command centers often rely on oral or written reports, leading to communication gaps, misunderstandings, and inadequate logistics of available resources. In this study, a real-time communication and information system for Triage, Position, and Documentation (TriPoD) has been developed using action research in collaboration with end-users to ensure high usability. TriPoD integrates commercially available technology, utilizing a digital triage tag with a unique ID number that attaches to each injured person. Prehospital providers scan the electronic triage tag via a mobile app, instantly sending data to command centers through a web portal. The developed TriPoD enables a seamless transfer of patient information through the whole emergency care chain, from the scene of the MCI during transport, to and within hospitals. The study aimed to evaluate TriPoD's effectiveness and usability during a simulated MCI with figurants.

Methods: Using a qualitative observational design, nonparticipant observers were stationed at the incident site, at a regional command center, and a hospital command center. Observers systematically compared TriPoD with standard procedures and management.
Results: Results revealed that command centers received real-time updates on the patient count, triage status, and locations faster than traditional methods. Data transmitted through the web portal was updated each time a new patient was scanned, allowing for continuous real-time monitoring and decisions. Both prehospital providers and command center users observed TriPoD's effectiveness and usability, with minor delays when prehospital emergency care providers did not consistently scan injured individuals.
Conclusion: The study demonstrates that seamless information transfer from MCI scenes enhances reliable communication and management efforts. Although TriPoD shows strong potential for improving MCI response and management, further development and testing with intended users are essential.

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How to Create a Low-Fidelity Simulation Model to Help Obtain Competency in the Rare and Potentially Injurious Procedure of Tourniquet Application Prior to an MCI

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Summary: Certain medical procedures are rarely performed, confer risk to the health care provider or patient, and are challenging to learn or practice. Attempted tourniquet placement on a non-injured limb, if fully deployed, can be painful or dangerous to the subject. Therefore, simulated tourniquet application would be an ideal way to learn or practice this skill without risking the target limb. We describe a low-fidelity simulation system that a volunteer can wear, allowing for safe tourniquet application to a limb while protecting the subject from any ill effects of the tourniquet.

This is accomplished by shielding the limb with a segment of PVC pipe easily obtained from any home improvement store. A 4.5-inch-long PVC tube with a diameter slightly larger than a subject's arm can be secured with a strap or rope around a volunteer's torso to hold the PVC in place over the mid-bicep. A Foley catheter can then be taped parallel to the tube lumen outside the PVC ring so it won't migrate. Using IV tubing, a refillable bag of IV fluid (+/- red dye) can then be attached to the Foley and allowed to flow out into a catch basin or draining tube. A learner can then practice applying a tourniquet to the arm and safely tighten it enough to occlude the flow of fluid through the Foley, simulating occluding a bleeding vessel. A pressure infusion cuff can be applied to the saline bag coupled with the Foley to generate any "blood pressure" that the testers wish, with the PVC eloquently protecting the wearer.

Low-fidelity simulation is a cost-effective and easy way for educators to ensure that learners can practice rare or dangerous procedures, such as tourniquet application. Such practice can build procedural competency so that it can be performed correctly when required.

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The Impact of Dashboard Utilization on Quality of Care in the Emergency Department: A Systematic Review

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Introduction: An adequate information system and management are pivotal to support communication and decision-making in the emergency department (ED). The use of a dashboard (visual display of data management), which consists of quality and clinical dashboards, efficiently provides information to manage ED processes and improve the quality of care. This study aims to evaluate the impact of dashboard utilization on ED quality of care and user experiences.
Methods: In this systematic review, six databases (i.e., PubMed, MEDLINE OVID, Web of Science, Scopus, CINAHL Plus, and EMBASE) were used to search relevant articles. The final search was conducted on April 22, 2024. Data collection was carried out using a data extraction form. All articles were scanned, read full-text, and analyzed using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline.
Results: Fifty-six full-text papers were retrieved, of which 23 were included in the review based on the inclusion and exclusion criteria. The impact of dashboard utilization on quality of care was categorized as timeliness (length of stay, boarding time, waiting time), safety (medication safety), patient-centered care (patient satisfaction and leave without being seen), efficiency (order for radiology, ED bed occupancy, cost, admission, drug prescription), and effectiveness (prognosis). Over the years, most of the studies measured the impact of dashboard utilization on timeliness and efficiency domains. No studies have yet measured the impact of the equity domain. From the user's perspective, dashboard usability was categorized as average to good. Situation awareness indicated as good where the highest scaled item was concentration support.
Conclusion: ED dashboard utilization affects timeliness, safety, patient-centered care, efficiency, and effectiveness domains. Future research is required to measure the impact of the equity dashboard and optimize artificial intelligence dashboard

utilization. This is the first systematic review evaluating the impact of using dashboards on the quality of care in the ED.

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Accuracy of a Commercial Large Language Model (ChatGPT) to Predict the Diagnosis for Pre-Hospital Patients Suitable for Ambulance Dispatch: Diagnostic Accuracy Study

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Introduction: While ambulance dispatch guided by artificial intelligence (AI) could be useful, little is known about the accuracy of AI in making patient diagnoses based on the pre-hospital patient care report (PCR). The primary objective of this study was to assess the accuracy of ChatGPT (OpenAI, Inc., San Francisco, CA, USA) to predict a patient's diagnosis using the PCR by comparing to a reference standard assigned by experienced paramedics. The secondary objective was to classify cases where the AI diagnosis did not agree with the reference standard as paramedic correct, ChatGPT correct, or equally correct.
Methods: In this diagnostic accuracy study, a convenience sample of PCRs from paramedic students was analyzed by ChatGPT-4 to determine the most likely diagnosis. A reference standard was provided by an experienced paramedic, reviewing each PCR and giving a differential diagnosis of three items. A trained pre-hospital professional assessed the ChatGPT diagnosis as concordant or non-concordant with one of the three paramedic diagnoses. If non-concordant, two board-certified emergency physicians independently decided if the ChatGPT or the paramedic diagnosis was more likely to be correct.
Results: ChatGPT-4 triaged 78/104 (75.0%) PCRs correctly (95% confidence interval 65.3% to 82.7%). Among the 26 cases of disagreement, judgment by the emergency physicians was that in 6/26 (23.0%) the paramedic diagnosis was more likely to be correct. There was only one case of the 104 (0.96%) where dispatch decisions based on the AI-guided diagnosis would have been potentially dangerous to the patient (under-triage).
Conclusion: In this study, the overall accuracy of ChatGPT to diagnose patients based on their emergency medical services PCR was 75.0%. In cases where the ChatGPT diagnosis was considered less likely than the paramedic diagnosis, most commonly, the AI diagnosis was more critical than the paramedic diagnosis, potentially leading to over-triage. The Under-triage rate was low at less than 1%.

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Lesson Learned from Tasikmalaya, One of the Most High-Disaster Risk Districts in West Java Province: Development of Health Crisis Risk Monitoring Information System in Primary Health Center (PHC) and District Health Office

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Introduction: Indonesia is one of the countries with the highest disaster risk in the world, including the Tasikmalaya District in West Java Province. An information system to support the health office and public health centers (PHC) was developed to monitor preparedness, implement mitigation strategies, and enhance their capacity in the pre disaster phase.
Methods: This study employs a research and development (R&D) methodology. It starts with a qualitative approach to data collection through interviews and focus group discussions (FGDs) with stakeholders. These stakeholders provided insights into the problems and user needs for the system design's foundation. The system design method used is the Framework Application of System Technique (FAST) approach.
Results: The data collection revealed several issues in system implementation in the field, including a lack of human resources, budgeting, infrastructure, and policy procedures. The system's user needs include disaster event monitoring and mitigation functions, visualization of attractive information such as maps and graphs as a dashboard, and features integrated with the climatology agency for early warnings. The system is also designed to be multi-user and accessible from various locations and platforms. Based on these findings, a web-based information system called HaRMoniS (health risk crisis monitoring information system) was developed, with features and functions aligned with the expectations and needs of the users. Thirty-eight out of forty PHCs used this system to cover almost two million people in the Tasikmalaya District.
Conclusion: With this system, PHC, the health office, as well as the community, can monitor disaster/health crisis risks, vulnerability levels, and capacity achievements in their area within the Tasikmalaya District. This allows the PHC and health offices, as the responsible parties for the health sector, to improve their preparedness, mitigation, and capacity-building efforts in the pre-disaster phase, thereby improving their readiness before a disaster occurs.

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Proposed System: Leveraging AI and Digital Health Technologies to Strengthen Resilience in Fragile Health Systems

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Introduction: Fragile health systems, predominantly in low- and middle-income countries (LMICs), face critical vulnerabilities, including inadequate infrastructure, workforce shortages, and socio-political instability. These weaknesses are exacerbated during crises such as pandemics, natural disasters, and conflicts, leading to devastating health outcomes. Traditional approaches have proven insufficient in addressing these systemic challenges. This research introduces a technology-driven framework leveraging artificial intelligence (AI) and digital health solutions to enhance the resilience of fragile health systems.

Objectives:

- Develop an AI-driven framework for identifying global health systems at risk of collapse.
- Analyze operational, clinical, and administrative vulnerabilities within fragile systems.
- Design and implement targeted interventions, including digital health solutions, workforce training, and infrastructure upgrades.

Methods:

The study is structured in three phases:

- Risk Identification: AI-driven predictive modeling will analyze global datasets, including socio-political and environmental metrics, to identify health systems at high risk of collapse.
- Vulnerability Analysis: Machine learning algorithms will assess operational inefficiencies, workforce challenges, and supply chain vulnerabilities in identified health systems.
- Targeted Interventions: Interventions, such as telemedicine platforms, AI-powered training modules, and electronic health records (EHRs), will be deployed. Community and stakeholder engagement will ensure sustainability and integration into national policies.

Results:

Expected Outcomes:

1. Creation of a scoring system categorizing health system fragility.
2. Implementation of interventions to enhance accessibility, efficiency, and sustainability in healthcare delivery.
3. Strengthened local capacity and integration of resilience strategies into national policies.

Conclusion: This research addresses critical global health challenges by transforming fragile health systems into robust, crisis-ready entities. Our work directly supports global health security, with implications for emergency preparedness and disaster medicine. By leveraging cutting-edge AI and digital health solutions, this project offers an innovative, scalable, and sustainable pathway to resilience in fragile health systems, ultimately contributing to equitable healthcare access and improved outcomes in vulnerable regions.

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UNESCO/CODATA Developing Data Policies for Times of Crisis Facilitated by Open Science

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Summary: As the COVID-19 pandemic and subsequent disasters and geopolitical conflicts have revealed, deficiencies in the capacity of science to integrate data readily and efficiently into crisis preparation, response, and recovery policy and actions significantly limit the capacity of scientists and policymakers to have full information.

UNESCO partnered with the Committee on Data (CODATA) of the International Science Council (ISC) to explore how the principles of open science, as outlined in the 2021 UNESCO Recommendation on Open Science, could guide efficient and effective policies for data sharing in times of crisis, taking into account existing international policies and action frameworks. The UNESCO-CODATA Data Policy for Times of Crisis Facilitated by Open Science (DPTC) project aims at developing guidance and tools for data policy required to address crises within the framework of the UNESCO Open Science Recommendation and to contribute to the UNESCO Open Science Toolkit.

The objectives of the toolkit include:

- Assisting policymakers in formulating data policies that promote open science during crises; Helping stakeholders implement data policies through the toolkit contributions being designed; Promoting collaboration among stakeholders involved in crisis response and research;
- Serving as elements of a communication and advocacy toolkit to raise awareness about the importance of open science and effective data policies during crises;
- and To be adaptable, flexible, and customizable to suit varying contexts and crisis scenarios by providing stakeholders with appropriately tailored tools to address their specific policy-related needs in an open science framework, taking into account local regulations, cultural considerations, and available resources.

Comprising a factsheet, a guidance document, and a checklist for data policies for times of crisis facilitated by open science, these resources are intended to assist in designing the most efficient data policies for times of crisis, not only addressing immediate response needs but also preparedness and long-term recovery.

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Adapting the Cloud-Based Electronic Medical Records System for Emergency Medical Teams to a Fully Offline Setting

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Summary: The Red Cross Red Crescent Health Information System (RCHIS) is an electronic health records and health information management system designed for international disaster response scenarios for medical documentation and reporting in the Red Cross/ Red Crescent equivalent of the Emergency Medical Teams (EMT), which are classified by the World Health Organization (WHO). It incorporates both a cloud-based server and a local server to address temporary internet outages, allowing remote information management and operational support when data-sharing agreements permit.

To enhance its functionality in settings with no internet access, RCHIS was adapted to operate entirely offline, ensuring operational continuity and redundancy. These settings may either be conflict settings without internet access or settings where data storage in the cloud is prohibited by local privacy or health data protection laws. An analysis of its architecture identified components reliant on the cloud-based server, and offline alternatives were developed to maintain full functionality.

Key modifications included the introduction of a second local server to improve redundancy and business continuity. This change enables data recovery from locally stored backups without requiring an internet connection. The system's account creation process was revised, replacing cloud-based mechanisms with a local process that generates and displays temporary passwords. Additionally, the system now supports offline generation of the WHO EMT Minimum Data Set (MDS) report.

These adaptations required significant architectural changes. While the shift to a fully offline mode sacrifices some cloud-based benefits, such as remote information management and operational support opportunities, RCHIS is now a robust tool for deployment in environments without internet connectivity. Furthermore, the use of a local server supports compliance with data sovereignty regulations, broadening the system's applicability in diverse operational contexts.

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Digital Transformation of EMT Daily Reporting: A Preliminary Study on Image Analysis for Automated Data Collection and Report Generation from Paper Medical Records

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Introduction: Emergency Medical Teams (EMTs) must compile daily reports of 91 Minimum Data Set (MDS) items for each operational site during disaster responses. This requirement demands extensive data aggregation into the standardized EMT MDS data format, creating a significant administrative burden in resource-constrained settings. While paper-based medical records remain essential in austere environments, manual compilation consumes critical time and resources. This preliminary research explores the feasibility of an automated approach using image analysis technology.
Methods: The exploratory development investigated three technical components: 1) Structured paper form design optimized for MDS parameter extraction through strategic placement of checkboxes and data fields; 2) Experimental implementation of Python-based image processing system with OCR capability and CNN-based checkbox recognition; 3) Data conversion pipeline generating CSV files compliant with EMT MDS eDATA format. Initial testing utilized simulated medical records to assess technical feasibility.
Results: Preliminary testing demonstrated the technical viability of automated data extraction and EMT MDS eDATA format generation. A convolutional neural network (CNN) model, trained with 1,504 data samples for checkbox recognition, achieved high accuracy metrics (accuracy, precision, recall, and F1-score all 0.98) in validation testing. The automated system reduced processing time from 20 to 10 seconds per medical record compared to manual data entry. The prototype system successfully generated standardized CSV outputs while reducing operator fatigue through automated data compilation.
Conclusion: This preliminary investigation demonstrates the successful bridging of paper-based medical documentation and digital reporting requirements in disaster response settings. The achieved 98% accuracy in data extraction and 50% reduction in processing time establishes a proof-of-concept for automated EMT daily reporting. Further development will focus on algorithm optimization for enhanced accuracy and speed, mobile application development for improved field usability, and systematic validation through multi-user testing under simulated operational conditions. This solution provides an efficient pathway for both mobility-focused EMTs and electronic health record backup strategies.

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Development and Social Implementation of D24H - Disaster/Digital Information System for Health and Well-being

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Introduction: D24H - Disaster/Digital Information System for Health and Well-being - was initiated in 2018 to provide information support for health, medical, and welfare activities during disasters and became fully operational in 2024. Integrated with the SIP4D (Shared Information Platform for Disaster Management) disaster information database, D24H customizes and delivers disaster-affected area information tailored for health, medical, and welfare supporters. During the Noto Peninsula Earthquake on January 1, 2024, D24H was

deployed to share critical information, including electricity and water supply statuses, road damage, and updates on medical institutions and shelters, thereby supporting the disaster-stricken area.
Methods: D24H comprises a database using Geographic Information Systems (GIS), tools for conducting field surveys in disaster-affected areas, and features for file and task sharing, as well as communication among support personnel. The system's functionalities were designed based on interviews with key stakeholders, including DMAT, DHEAT, DWAT, and the Japanese Red Cross Society, which are involved in health, medical, and welfare support activities during disasters.
Results: Information on disaster-affected areas can now be visualized on maps and summarized in a dashboard using indicators, aiding the Health, Medical, and Welfare Coordination Headquarters in gaining an overview of the affected region. The survey tool implemented a smartphone-based input system, allowing flexible customization of survey targets and items as needed. Interviews revealed high expectations for the implemented file-sharing and communication tools.
Conclusion: D24H, deployed during the Noto Peninsula Earthquake, successfully visualized the situation in the disaster-affected area and contributed to health crisis management activities for disaster victims. However, due to a lack of adequate training and practice opportunities before deployment, not all functionalities were fully utilized. Since the earthquake, many health, medical, and welfare supporters have inquired about training and workshops. By acquiring proficiency in D24H through training and exercises, stakeholders can better prepare for future disasters.

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Development of a Simulation Model for Disaster Medical Support

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Introduction: Japan frequently experiences natural disasters such as earthquakes and typhoons, and medical support during disasters has become a critical challenge, particularly in a super-aged society. Previous research has utilized simulations to analyze medical resource allocation and Disaster Medical Assistance Teams (DMAT) activities during the acute phase. However, there has been insufficient focus on medium-term measures, including primary care for chronic illnesses in aging populations. This study aims to develop a simulation model that replicates processes from the occurrence of a disaster to evacuation behavior, the emergence of medical needs, especially for chronic diseases, and activities of medical support team patrols at relief stations and shelters, to efficiently allocate medical resources and develop support plans.
Methods: An agent-based simulation model was developed to analyze evacuee behavior, changes in medical needs over time, and the impacts of medical team rotations and supply timing on shelters. The model incorporates various scenarios, such as the timing of aid station establishment and medical supply distribution, while considering geographical and timing of actions. This approach enabled a comprehensive analysis of medical support and resource allocation options during disasters.
Results: The simulation results validated the effectiveness of multiple policy scenarios and identified optimal resource allocation based on medical demand patterns. Geographical conditions and timing were found to significantly influence the placement of aid stations and the assignment of human resources. Statistical analysis and optimization techniques were applied to determine ideal strategies for specific conditions, enabling the sophistication of simulation model parameters.
Conclusion: The disaster medical simulation model developed in this study provides realistic evacuation behaviors and medical demands. It serves as a valuable tool for optimizing resource allocation and intervention timing in disaster scenarios. Additionally, the model demonstrates potential for improving disaster response capabilities through scenario-based training and could contribute to the standardization of disaster medical support plans.

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The Guidelines for Prefectures to Utilize Mobile Medical Containers in the Event of Disaster

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Introduction: The Ministry of Health, Labor and Welfare in Japan has been researching "The Use of Mobile Medical Containers in Large-Scale Disaster" under the Koido Research Team, and as part of the research, is preparing draft guidelines to deploy and standardize mobile medical containers in prefectures. Amid this preparation, the Noto Peninsula Earthquake occurred on January 1, 2024, and mobile medical containers were deployed and utilized in 11 locations in the affected area. In response, the government commissioned the Mobile Medical Container Promotion Council (MMCPC) to conduct a survey and compiled "The Report on the Deployment and Operation of Mobile Medical Containers in the Noto Peninsula Earthquake in 2024" (hereafter "the Report".)[Objective] To clarify how the lessons learned from the Noto Peninsula Earthquake should be reflected in the draft guidelines being prepared.
Methods: The study reviews the contents of the Report and discusses them with the MMCPC and other interested parties.
Results: In the Report, the issues and recommendations from the Noto Peninsula Earthquake are described in Chapters 4 and 5. From these issues and recommendations, it became clear that the guidelines for the use of mobile medical containers should include the types of use as follows: 1)use at evacuation centers (single or multiple use), 2) supplemental functions for medical institutions (including supporter assistance, multiple use), 3) functions such as SCUs or coordination headquarters (multiple use). It was also confirmed that necessary tasks in line with the timeline, such as the occurrence of disasters, investigation,

ordering, receiving orders, transportation, installation of facilities, medical care, and other related services, removal of facilities, or billing, need to be mentioned.

Conclusion: Further considerations need to be continued to make the guidelines more useful in the future.

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Demand Analysis and Preparedness Experience for Logistic Supply Requirements of Disaster Medical Assistance Teams: A Case Study of Hualien DMAT

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Summary: In Hualien, Taiwan, the mountainous terrain covers 90% of the area, and medical resources are concentrated in urban centers, which makes emergency response in disaster situations challenging. Natural disasters occur frequently, and Hualien County urgently needs to establish and develop a disaster medical rescue team. In 2018, the Hualien County Health Bureau formed a disaster medical team to address local needs. However, accurately estimating logistical supply requirements remains a significant challenge, as insufficient supplies may delay response, while overstocking leads to resource waste.

To improve the accuracy of advanced preparation of logistical supplies, Hualien's major disaster data in the past ten years were reviewed. A major disaster is an incident involving more than 30 injured people. The two most significant incidents were the 2018 earthquake (293 injuries) and the 2021 train accident (220 injuries), of which over 90% were trauma victims. Based on these data, supply and demand are estimated using the Historical Data Projection method adapted to local conditions. Emergency nurse practitioners experienced in responding to these disasters completed a questionnaire about supply types and quantities.

Through this analysis, the four most in-demand supplies were identified: 4x4 gauze pads (221 packs), cotton swabs (222 packs), 4-inch elastic bandages (43 packs), and 6-inch elastic bandages (28 packs).

This study demonstrates that the high demand for gauze and swabs underscores the critical need for wound cleaning and dressing in trauma-heavy scenarios. Literature suggests that precise pre-arrangement of logistical supplies reduces resource waste and improves cost-effectiveness. The Historical Data Projection aligns with Hualien's needs, providing reliable guidelines for resource allocation. Ongoing data collection and AI integration will further enhance the accuracy of supply forecasting, ensuring efficient disaster response.

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Using Lean Management to Improve the Efficiency of Medical Supply Access for Disaster Medical Teams - A Case Study of Hualien County Disaster Medical Team

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Summary: The Hualien County Disaster Medical Team, established in 2018, aims to enhance disaster response efficiency. Experiences from several major earthquakes and a train derailment in 2021 revealed that personnel had spent much time locating supplies in complex disaster settings. Applying Lean Management principles, we developed "modular tactical medical belt bags" and "tactical belts" to facilitate the location of supplies, aiming to reduce time and improve operational efficiency by:

1. Regularly checking the inventory and expiration date.
2. Categorizing disaster supplies into modular tactical kits (Triage, Injection, Trauma, Immobilization, and Personal Items Kits). For saving time, tactical kits are fully replaced rather than restocked item-by-item when some items are exhausted.
3. Utilizing tactical belts. The belt, equipped with essentials like a radio and tape, allows responders to keep critical items readily accessible.

Modular kits effectively reduced the time spent retrieving supplies in disaster settings. Tactical belts saved an average of 2 minutes in locating items. Initially, tactical kits were restocked by logistics, taking an average of 5–7 minutes. Later, the process was changed from refilling bags to exchanging used bags for fully stocked ones, giving responders instant access to necessary supplies. This adjustment increased user satisfaction from 82% to 93%.

Every second counts. Applying lean management to DMAT logistics design - "Modular Tactical Medical Waist Bag" and "Tactical Belt" - reduces the time consumed in inventory management, enables faster acquisition of necessary items in unfamiliar environments, and improves the efficiency of disaster medical response.

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Social Media–Detected Early Disaster Events: An E-Warning System of Emergency Medical Operation Centers Deployed in Taiwan

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Introduction: Because messages are broadcast on social media timelessly and efficiently, it is a critical disaster management survey tool. Taiwan's Regional Emergency Medical Operation Center (REMOC) has responded to nationwide disaster messages in real time since 2005. To construct an early warning system to reduce the delay between the outbreak of accidents and messages received by REMOC.
Methods: Timely data, often from first responders and social media, is critical. A system was developed to collect disaster related posts from social media platforms, focusing on keywords like typhoon, flooding, and traffic accidents. Given the mix of topics, informal language, and frequent errors, text analytics and the SVM-based tool LibShortText were used to classify relevant messages. REMOC's system identified 3,022 disaster-related messages out of 66,588 total posts. We calculated event frequency in 2019, response speed, and engagement rate (ER) to assess the responsiveness of traditional media and individual users.
Results: Most messages collected were related to earthquakes (23%), followed by traffic accidents (17%), fires (12%), and floods (3%). Of 702 earthquake-related messages (142 episodes), social media users shared 35 messages about 18 earthquakes, while traditional media posted 667 messages about 124 earthquakes. Social media consistently posted 100% of earthquake messages faster than traditional media ("early dissemination efficacy": 124/124). For 251 fires (367 messages), social media shared 122 messages on 82 fires, with an early dissemination efficacy of 0.57 hours. For 32 flood events (117 messages), social media posted 55 messages on 16 floods, achieving an early dissemination efficacy of 0.65 hours.
Conclusion: Results show that social media users responded faster than traditional media to disaster news, especially for earthquakes, fires, and floods. Earthquakes and floods had the highest response rates from social media. Integrating REMOCs and social media information systems can greatly enhance preparedness and response, particularly for earthquakes and floods.

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Construction of a System for Retrieving Notification Documents Issued When There Is a Disaster Using Multimodal AI

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Introduction: Information management for large-scale disasters is at the heart of logistics. When there is a disaster, the MHLW issues a notification document regarding the measures to be taken by the MHLW and the relevant local governments, depending on the damage situation. However, it takes time to summarize and understand the notification documents. Therefore, we developed a system using Gemini to search for notification documents issued in the event of a disaster.
Methods: Gemini is a multimodal AI that can make advanced decisions by combining various types of information and can quickly summarize and search information from Google Drive. Notification documents were stored in Google Drive, and questions were created from keywords such as "dispatch of medical professionals" and "handling of insurance treatment," and the search results were verified.
Results: As a result of searching for the question, "I want to know about the dispatch of medical personnel when there is a disaster," three materials were matched. In addition, the search results included a summary of the materials and links to all related materials stored in Google Drive.
Conclusion: The advantages of the notification document retrieval system are as follows: it is possible to check the notifications that are common to multiple disasters at once, anyone can use it free of charge by sharing an account, and it is possible to summarize the contents of the materials as well as extract related materials. Conversely, as an improvement, it was mentioned that since it is not an exact match, documents that are not necessary are extracted, and only a part of the required documents is extracted. Although it is necessary to devise ways to share accounts and update data, a notification document retrieval system using multimodal AI can be expected to manage information in the event of a disaster.

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Computer Simulation Comparison for the Different Evacuation Strategies of Patients in Mass Casualty Incidents

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Introduction: The evacuation of patients in mass casualty incidents is an important part of emergency management. The appropriateness of evacuation strategies determines whether the patients can receive adequate treatment in time. Real-world evacuation cannot be re-performed, but models of evacuation can be constructed through computer simulation. Thus, the different evacuation strategies can be compared in simulations.
Methods: There are some important factors in the evacuation strategy: the number and distance of hospitals, the capacity of hospitals, and the number of vehicles. In this study, past mass casualty incidents are used as reference sources for the patient data. The evacuation processes are simulated with well-established software, and the rules are modified according to different strategies. Several strategies with different settings are compared in the results of the patient treatment, and the influence and the weight of different parameters are analyzed.
Results: From the comparison of different strategies, the strategy with the shortest time from the scene to the hospital has the larger number of hospitals, a higher hospital capacity, and vehicles for transportation are sufficient. In addition, adding faraway hospitals as evacuation options when vehicles are limited will not reduce the time it takes for patients to arrive at the hospitals.
Conclusion: The appropriate decision of evacuation strategy can help patients get proper treatment as soon as possible.

In the case of limited resources, different evacuation parameters will have different weights in the outcomes. Computer simulations are ideal for analyzing such complex situations that cannot be reproduced in reality.

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Predicting the Number of Consultations by Emergency Medical Teams During Disasters Using a New Statistical Model

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Introduction: When a natural or man-made disaster occurs, emergency medical teams (EMTs) are dispatched to deliver medical surge capacity for injured and sick individuals. Accurate prediction of EMT consultations during disasters can improve dispatch and withdrawal decisions. However, no published studies have yet demonstrated a method for predicting the number of consultations or patients based on EMT activity data. This research explores an innovative yet simple and reliable method to predict the number of consultations required by EMTs during disasters, aiming to enhance the effectiveness and efficiency of medical response.
Methods: Data for this study were collected using the Japan-Surveillance in Post-Extreme Emergencies and Disasters (J SPEED) system and the Minimum Data Set (MDS) framework. These datasets encompassed five disasters in Japan and one in Mozambique. For each disaster, the number of consultations was predicted using the K-value and the constant attenuation model, an approach originally developed to forecast the number of COVID-19 patients.
Results: The total number of Emergency Medical Team (EMT) consultations per disaster varied between 684 and 18,468. The predicted curves closely matched the actual K-value data for each disaster, with R^2 values ranging from 0.953 to 0.997. However, offset adjustments were required for the Kumamoto earthquake and the Mozambique cyclone, as their R^2 values were below 0.985. Across all six disasters, the differences between the predicted cumulative number of consultations, based on K-values, and the observed numbers ranged from ±1.0% to ±4.1%.
Conclusion: The K value and constant attenuation model reliably predicted EMT consultations during six different disasters. This simple model may be useful for the coordination of future responses of EMTs during disasters.

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Virtual Decontamination: Use of an Innovative Virtual Reality Training Tool for Mass Casualty Decontamination in the Emergency Department

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Introduction: Successful decontamination of chemically contaminated casualties requires staff to be well-trained and familiar with complex processes and workflows. The task is made more challenging with space and time constraints, with each drill lasting 4 hours. Virtual reality (VR) has been proposed as a tool in disaster and decontamination training due to the realism and cost advantages over large-scale real-life exercises. This study aims to compare the usefulness of a novel VR training tool against conventional live decontamination training in a single-centre emergency department (ED) in Singapore.
Methods: This study was a collaborative effort between Tan Tock Seng Hospital Emergency Department and Singapore Institute of Technology research professors, engineers, and interns. Healthcare workers with no prior experience first underwent mass casualty decontamination training using an innovative VR training tool in a 2-hour session. Knowledge of workflows and processes was then assessed on a 15-point test. This was also administered to other healthcare workers who had undergone conventional training. The primary outcome was the test scores for each group of healthcare workers. Secondary outcomes included scores for technical quality of the software and qualitative feedback provided by VR trainees.
Results: Forty healthcare workers have been scheduled to complete their VR training sessions over the next two months. From the conventional group, 45 healthcare workers had a mean test score of 75.4%. Full results, including analysis of primary and secondary outcomes across both the VR and conventional groups, are expected by January 2025.
Conclusion: The results of this study will be useful in validating the use of VR in decontamination training as an effective training tool. Lessons learned from developing the VR tool can also be applied to other VR applications in the future.

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Harnessing Artificial Intelligence for Crisis Management: A New Era in Disaster Medicine

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Introduction: The integration of AI into the field of disaster medicine represents a significant advancement in improving the speed and efficiency of emergency response by facilitating faster decision-making processes, optimizing resource allocation, and enhancing communication systems. Given the effectiveness of AI, it is essential to explore its potential applications within disaster medicine. To investigate this topic, we conducted a scoping review on AI applications aimed at enhancing the efficiency of emergency response and minimizing the time to care.
Methods: Following the PRISMA-ScR guidelines, a comprehensive search was conducted across five databases. Peer-reviewed studies published in English between 2019 and 2024 that focused on AI applications in disaster medicine were included. Two reviewers independently screened the titles, abstracts, and full texts. Relevant findings were extracted in a thematic format.
Results: Out of 15,431 studies, 239 were included. The volume of publications increased from 8 in 2019 to 59 in 2021. Research output was predominantly concentrated in Asia (40%), followed by multi-country collaborations (21%), with both Europe and North America contributing (15%) each. The primary focus of the studies was on machine learning (65%), often in combination with deep learning (50%) and decision-support systems (36%). Common applications identified included decision-support tools (86%), AI-assisted triage (63%), early warning systems (52%), and patient monitoring (49%). Notably, most of the studies (84%) concentrated on pandemics, while natural disasters were (16%), and humanitarian crises (3%).
Conclusion: The results of our research indicate that the COVID-19 pandemic has resulted in rapid advancements in innovative applications, primarily focused on enhancing situational awareness and optimizing triage procedures in pandemic-related emergencies. To evaluate the life-saving potential of AI, it is essential to integrate these technologies into a wider range of disaster scenarios, supported by rigorous validation processes. This approach will improve the ability of responders to protect communities during future disasters.

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Identification of Gut Microbiota Biomarkers for Radiation Exposure

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Introduction: High doses of radiation can cause Acute Radiation Syndrome, with one fatal complication being bacteremia and septicemia due to intestinal bacteria entering the bloodstream after epithelial damage. Over the 130 years since radiation's discovery, survival has been observed at exposures below 3–4 Gy; patients exposed to over 4–5 Gy with severe gastrointestinal damage have a 0% survival rate, making gastrointestinal health key for survival. This study investigated short-term changes in gut microbiota following radiation exposure to aid in developing diagnostic and therapeutic methods for radiation accidents.
Methods: Eight-week-old male C57BL mice were divided into three groups (0, 4, and 8 Gy; n = 4) and exposed to whole-body X-rays. Cecal contents and rectal feces were collected 72 h post-exposure. Gut microbiota was analyzed by sequencing the V3-V4 region of the 16S rRNA gene (2 × 300 bp, MiSeq) and comparing sequences with the EzBioCloud 16S database. Alpha and beta diversity and bacterial composition were analyzed using Qiime2, with regression analysis performed using the R package MaAsLin2. Alpha diversity was calculated with the Shannon Index, and beta diversity with the Weighted Unifrac distance. Statistical analysis was performed using one-way ANOVA.
Results: Significant differences in alpha diversity were observed in cecal flora (CF) between the 4 Gy and non-irradiated groups, with irradiated groups showing higher median values, even when no significant differences were found. Beta diversity differed significantly in both CF and rectal flora between the 4 Gy and 8 Gy groups compared with the non-irradiated group. Genera in the families Muribaculaceae and Lachnospiraceae correlated positively with radiation dose, whereas the genus Kineothrix showed a negative correlation. Ruminococcus and Turicibacter increased only at the high exposure levels. These bacterial genera could serve as dose markers.
Conclusion: Further research will investigate the reproducibility of these findings and whether restoring disrupted microbiota could aid in treatment.

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Developing Know-How to Transport Ambulances in Containers to Disaster-Stricken Areas on Freight Trains

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Summary: To devise a means of reducing the burden of transportation of medical team members from unaffected areas to the vicinity of disaster-stricken areas in the event of a disaster.

In the 2024 training exercise for medical activities during a major earthquake, we planned to transport the Disaster Medical Assistance Team (DMAT), four teams from Hyogo Prefecture and two from other prefectures, from freight stations in Kobe and Osaka outside the disaster area to Sagami freight station in the assumed disaster area using freight trains. In this case, high-height vehicles, such as ambulances, were placed in open-top containers, while low-height vehicles, such as DMAT cars, were placed in 20-ft general-purpose containers. The team members were to meet at Sagami Freight Station by the

Shinkansen bullet train the day after the vehicles were dispatched, to receive them in anticipation of their arrival. After the training, the return trip was also conducted in the same manner.

The vehicles were placed in containers at the departure terminal station and shipped two days before the training. The team members entered the affected area by bullet train the day before the training exercise.

Half of them received their vehicles as scheduled, but the other half had to change the receiving station due to freight train delays. All the vehicles participated in the large-scale earthquake medical operation training on time without any problems. There were no delays or other problems on the return trip.

Emergency vehicle transport by freight train was feasible and showed the potential to help reduce the workload of the crews. Although there were delays on the outbound route, the arrival time was more predictable than self-driving on the expressway, and could be handled by changing the receiving station.

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Emergency Medical Services Perception of the Use of Wearables in Patient Management During Mass Casualty Incident Management

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Introduction: Emergency Medical Services (EMS) play a crucial role in Mass Casualty Incidents (MCIs). To improve tracking and the quality of clinical information during MCIs, several electronic devices have been developed. This study aims to evaluate Italian EMS professionals' perceptions of a hypothetical wearable device during MCIs, implement its use in MCIs, and improve MCI management and patient outcomes. Using the Technology Acceptance Model (TAM), this study aimed to measure the perceived usefulness, the perceived ease of use, and the behavioral intention to use the device. It features a unique patient identifier, vital sign monitoring, LED-based triage code assignment, geolocation, and real-time wireless data transmission to a server.
Methods: A voluntary and anonymous survey was electronically distributed to all 67 EMS dispatch centers across Italy. Following an introduction outlining the device's functions, the questionnaire comprised questions for demographic data collection and questions to explore TAM constructs. Questions were structured using the seven-point linear numeric scale, ranging from "strongly disagree" (1) to "strongly agree" (7).
Results: Among the 141 respondents, the median age was 45; the majority were male (60%), nurses (67%), and reported five or more years of EMS experience (77%). 52% of them reported previous experience in MCI response. The survey showed excellent internal reliability (Cronbach's alpha: 0.95). Overall, participants considered the device useful for improving situational awareness, coordination, resource allocation, and patient care. However, regarding the perceived ease of use, no consensus emerged on the integration challenges in MCI workflows and the possible slowdown in rescues. Finally, most participants would use the device and would recommend its comprehensive adoption in future MCI responses.
Conclusion: This study suggests that this hypothetical wearable device might be a promising tool valued by EMS professionals; however, further investigation is warranted to address the lack of consensus regarding its impact on patient care during MCI response.

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Digitalization of Japan DMAT Information Management

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Introduction: The WHO EMT Minimum Standards emphasize the importance of collecting and assessing information, integrating and analyzing data to formulate response strategies, sharing information with relevant organizations, and documenting and reporting activities in detail. Japan DMAT Information Management during disasters involves collecting, consolidating, evaluating, and analyzing information to determine action plans. This study examined the effectiveness of digitalized information management among the Japanese DMAT to enhance the efficiency of information collection and analysis compared to traditional methods.
Methods: The Japan DMAT training course, past Japan DMAT national exercise and regional exercise, and 2024 Noto Peninsula Earthquake DMAT responding activities are reviewed. A comparison was conducted between traditional handwritten information processing and its digitalized counterpart based on eight criteria: accuracy of record keeping, searchability, ease of sharing, efficiency of storage and preservation, flexibility in editing and updating, portability, ease of analysis and statistical processing, and security.
Results: The digitalization of information brought numerous benefits to Japan's DMAT operations. This initiative enhanced data accessibility, facilitated smoother communication, and improved overall operational performance, contributing to more effective information management.
Conclusion: The digitalization of information has demonstrated its efficacy by mitigating information overload, ensuring swift access to critical data, and enabling the comparison of historical and real-time information. These strengths contribute to the expedited development of action plans and significantly enhance overall operational effectiveness.

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Utilizing Free DNA From Decomposed Cadaver to Facilitate MPS-Based Disaster Victim Identification in Tropical Climates

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Introduction: Tropical climates pose significant challenges to disaster victim identification (DVI) due to heat- and humidity-induced DNA degradation.
Methods: This study investigates the preservation of free DNA from decomposed cadavers for MPS-based DVI. Psoas muscle tissues were preserved in modified TENT and DNA/RNA Shield™ at 25°C and 35°C for 1, 2, and 3 months. Following silica-based purification (QIAquick®), free DNA was analyzed using the ForenSeq™ DNA Signature Prep Kit to assess its quality and completeness for MPS analysis.
Results: Coverage of Y-STRs, X-STRs, and identity SNP markers relevant to DVI was evaluated. The study confirms that DNA/RNA Shield™ is more effective than modified TENT in preserving free DNA integrity, allowing for higher STR allele detection over time. This finding aligns with previous research, emphasizing DNA/RNA Shield™'s superior performance in maintaining variant and marker detectability across various conditions.
Conclusion: This research explores the feasibility of utilizing free DNA as an alternative source for reliable MPS-based identification in challenging tropical conditions.

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Development of an Information System Application for French Medical Psychological Emergency Units to Manage Mental Health Support During Crisis Events ("Cellule d'Urgence Médico-Psychologique – CUMP")

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Introduction: Following a wave of terrorist bombings in the mid-1990s, France established Medical-Psychological Emergency Units (MPEUs - "Cellule d'Urgence Médico-Psychologique - CUMP"). These units aim to provide immediate mental health and psychosocial support to victims and emergency responders.

During the COVID-19 pandemic, the Bordeaux MPEU pioneered the use of cloud computing to coordinate real-time activities across 13 regional mental health units serving 6 million people.

Based on 30 years of disaster psychiatry expertise and national guidelines, this innovative

The approach was recognized by the government's Regional Health Agency, leading to the development of an information system application (ISA) specifically tailored to manage mental health and psychosocial support during crisis events.
Methods: The alpha version of the ISA for MPEU has been tested locally since the Paris 2024 Olympics. It is a multimedia app that offers various functionalities based on the user's profile. Volunteers are mobilized via the app on their smartphone, have real-time event tracking, and can record their clinical activity. For unit managers, it facilitates triggering the network, deploying resources, and coordinating real-time responses to the evolving crisis. For institutions, it enables monitoring of the ongoing crisis and adjusting responses.

The app, designed for major multi-site events, has been beta tested in full-scale disaster simulations in Bordeaux since October 2024. The simulations showed that the ISA system significantly improved the speed and accuracy of information dissemination among responders. The mental health research functions remain to be integrated and tested for the full version.
Results:
Schedule :
- End of 2024: full version for departmental level
- Early 2025: full deployment for regional version (Nouvelle Aquitaine, 6.3 M inhabitants). Data will be collected and reported in April 2025.

Conclusion: The ISA-MPEU improves the network's capacity to provide rapid and effective support in emergencies, while at the same time providing a research tool through its database of mental health responses.

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Level of Seal Across Advanced Airway Management Devices

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Introduction: Appropriate seal of airway management devices is a crucial factor during ventilatory support in critically ill patients. The presence of a leak during ventilation is associated with worse patient outcomes. This study aims to evaluate the level of seal of advanced airway management devices during mechanical ventilation in a manikin model.
Methods: Advanced airway management devices, such as an orotracheal tube, a laryngeal mask 1st generation, a laryngeal tube, and an i-Gel, were placed in the manikin simulator Code Blue® III Adult with OMNI® (Gaumard). Ventilatory support was delivered through the Ventway Sparrow mechanical ventilator at predefined ventilatory settings across all devices for ten minutes.
Results: Ten device placements were conducted for each one. The manikin provided feedback on achieving the target volume set during ventilatory support across all evaluated devices. For the analysis, a total of 1200 ventilations in each device were

evaluated. Target volume achievement for orotracheal tube was 100%; for laryngeal mask 1st generation was 74% (95% CI: 65-83%); for laryngeal tube was 83% (95% CI: 80-86%); and for i-Gel was 98% (95% CI: 96-100%). The level of leakage is inversely proportional to the level of compliance with the target volume. While the endotracheal tube remains the gold standard for target volume achievement and to avoid leaks, i-Gel seems to be an appropriate option until definitive airway management placement.

Conclusion: Results suggest a wide variability of seal level between different airway management devices. Endotracheal tubes stand out as the gold standard for an appropriate seal against the 1st generation laryngeal mask. However, the manikin study comprises several limitations; further studies are needed to compare the level of seal in real patients and its impact on patient mortality and complications.

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Assessing the Responses of miR-200b and miR-429 in Cyanide Poisoning Cases

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Introduction: Cyanide is a well-known toxin that disrupts aerobic cellular function by binding to ferric ions in mitochondrial cytochrome oxidase a3. This interaction inhibits ATP production, disrupts oxidative phosphorylation, and leads to cellular hypoxia, ultimately impairing cell function. In response to hypoxic or asphyxic conditions, cells rapidly activate hypoxia-inducible factors (HIFs). Previous studies have identified around 50 microRNAs linked to HIF activation, collectively known as "hypoxamiRs". This study aims to investigate the relationship between cyanide poisoning and hypoxamiR responses by focusing on two specific hypoxamiRs, miR-200b and miR-429, which have been identified as HIF activators during acute hypoxic states.

Methods: Postmortem blood samples were collected from five cyanide poisoning cases and five non-asphyxia control cases. Total RNA (10 ng) was used to synthesize complementary DNA (cDNA) via the MultiScribe™ Reverse Transcriptase. The expression levels of miR-200b and miR-429 were quantified using the TaqMan™ MicroRNA Assay and measured on the QuantStudio™ 5 Real-Time PCR System. The data was analyzed by using the comparative C(T) method.

Results: The results indicated an increase in miRNA-429 expression in 4 out of 5 cyanide poisoning cases. In contrast, miR 200b exhibited a decreasing trend, suggesting potential downregulation.

Conclusion: Overall, hypoxamiRs, particularly miRNA-429 and miR-200b, could provide valuable insights into the prognosis of cyanide poisoning, highlighting the need for further research to validate their roles as potential biomarkers.

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AI-Based Predictive Modeling for Prognosis of Hydrofluoric Acid Exposure: A Systematic Meta-Analysis of Individual Participant Data

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Introduction: Hydrofluoric acid (HF) exposure leads to severe and life-threatening injuries, necessitating prompt and accurate prognosis for effective treatment. Despite advancements, machine learning (ML) in predicting outcomes for HF exposure is underexplored. This study aims to develop a robust AI-driven model to forecast hospitalization and mortality in HF exposure cases.

Methods: A comprehensive dataset of 163 patients treated for HF burns was utilized, including demographic data, injury specifics, and initial treatment responses. Data, extracted from case series and reports following PRISMA guidelines (1979-2020), were preprocessed to handle missing values and encode categorical variables. Due to significant class imbalance, under-sampling techniques were applied. Multiple ML algorithms, including Logistic Regression, Random Forest, and Gradient Boosting Machines, were evaluated. Models were trained using stratified k-fold cross-validation and optimized through grid search. Statistical analysis was performed using Python (version 3.8) with libraries like scikit-learn, pandas, and numpy. Initial treatments included topical calcium gluconate application, intravenous calcium gluconate, and Hexafluorine irrigation.

Results: The Random Forest model, after hyperparameter tuning and data balancing, outperformed others, achieving an accuracy of 93.94%, precision of 94%, recall of 100%, F1-score of 97%, sensitivity of 93%, specificity of 90%, and an ROC AUC of 0.9355. Key predictive features included age, total body surface area (TBSA) affected, and initial treatment type. Older age and higher TBSA were linked to worse outcomes, defined as increased mortality and hospitalization. Topical calcium gluconate was the most effective initial treatment, followed by intravenous calcium gluconate and Hexafluorine irrigation. The confusion matrix showed excellent balance, maintaining high recall without sacrificing precision.

Conclusion: The AI-driven model enhances clinical decision-making for HF exposure by providing accurate prognostic information. By addressing class imbalance and leveraging advanced ML techniques, the model improves predictive performance. This tool can help clinicians make informed treatment decisions, optimize resource allocation, and improve patient outcomes.

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Readability of Patient Information Leaflets Improved by Large Language Model Artificial Intelligence

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Introduction: Artificial intelligence (AI) is revolutionizing healthcare. Emergency departments (EDs) are under increasing time pressure, and physicians often rely on patient information leaflets (PILs) to inform/reassure patients with common presentations. International recommendations require PILs to be at an appropriate reading level (that of a 12-year old child), thereby improving comprehension for patients (7, 8). Some PILs are too difficult to read for patients(9, 10), demanding consideration of appropriate lexical complicity (7, 11).
Methods: This study assesses whether commercially available large language models (LLMs) can improve the reading comprehension level of PILs. The readability/lexical complexity of 19 PILs currently used in an Irish ED was measured with validated reading level metrics, including the Common European Framework of References for Languages (CEFR) grade, using an online tool against the set standard reading comprehension. Two LLMs were employed with the same instructions to rewrite the PILs, scored using the same metrics, and improvements quantified.
Results: Only three current PILs met the required lexical complexity level (median 63.3%, IQR 7.3). LLM generated PIL overshot the improvement in reading level, simplifying it by a median of 4% (1 CEFR level). The first LLM improved the median reading level to 60.25% (CEFR = C1, IQR 6.41), while the second LLM resulted in a median reading level of 56.92% (CEFR = C1, IQR = 5.6), meeting the target in 12 of 19 PILs.
Conclusion: The findings demonstrate the importance of a critical review of the reading levels used in EDs. LLMs may be employed to facilitate improving readability, but may not be able to reach the instructed reading level at first iteration, and are more useful in simplifying PILs at an initial college reading level. All AI-generated PIL retained the core message. Currently available LLMs may be utilized by healthcare workers to simplify PIL, improving readability to the recommended reading level.

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Proposal for a Digital Device to Improve the Impact of Disaster-Related Information, such as 'Nankai Trough Earthquake Temporary Information' on Mental Health

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Introduction: In Japan, temporary information is issued about disasters to reduce damage. On 8 August 2024, the Japan Meteorological Agency issued the first temporary information bulletin (Caution: Major Earthquake) about the possibility of a large-scale earthquake occurring in the assumed epicentral region of the Nankai Trough Earthquake. Although this kind of temporary information is useful for disaster prevention, we believe that it may have an impact on the mental health of many people, so we will conduct a survey and propose ways to intervene.
Methods: A psychological survey was conducted on web monitors before and after the 8 August 2024 Nankai Trough Earthquake Special Information (17 April; 22 August). A psychological survey was conducted on web monitors before and after the 8 August 2024 Nankai Trough Earthquake Special Information (T1: 17 April; T2: 22 August). The number of people surveyed was 300 for T1 and 1,400 for T2. The psychological test forms used were the Depression Anxiety Stress Scales (DASS)-21 and the Impact of Event Scale-Revised (IES-R). The scores are shown as the median (25th percentile - 75th percentile).
Results: The Depression score on the DASS-21 changed from T1 0 (0-1) to T2 2 (0-8), the Anxiety score from T1 2 (0-12) to T2 2 (0-10), and the Stress score from T1 2 (0-16) to T2 2 (0-6). The PTSD score, as indicated by the IES-R, also changed from T1 3 (0-9) to T2 4 (0-17). Mann-Whitney's U test showed a significant difference in Depression, Stress, and PTSD scores ($P < 0.05$).
Conclusion: Although this is temporary information for disaster prevention, it may affect the mental health of many people. To maintain the mental health of these many people, our team would like to propose the introduction of smartphone apps such as the me-fullness® app.

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The Acute Radiation Syndrome-Mitigator Romiplostim and Secreted Extracellular Vesicles Improved Survival in Mice Exposed to Myelosuppressive Doses of Ionizing Radiation

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Introduction: There is a growing concern about the risk of exposure to acute and lethal doses of ionizing radiation due to terrorist attacks and the recent threat of nuclear weapons. In the event of a radiological or nuclear public health emergency, several thousand people suffer severe injuries from radiation exposure, which can lead to acute radiation syndrome (ARS). Thus, there is a grave need for therapeutic strategies to ameliorate ARS and save the lives of survivors. It was reported that the thrombopoietin receptor agonist romiplostim (RP) has the potential to rescue mice exposed to lethal total-body ionizing radiation (TBI). However, the detailed action mechanism of the radio-mitigative and life-saving effects of RP remains unclear. This study focused on the extracellular

vesicles (EVs), which are involved in cell-to-cell communication, because the mechanism of RP action may be related to EVs that reflect the radio-mitigative information.

Methods: Female C57BL/6 mice exposed to lethal TBI were treated with RP, and the EVs were isolated from the serum and intraperitoneally injected into other mice with severe ARS.

Results: The 30-day survival rate of mice subjected to lethal TBI with 6.5 Gy of X-rays drastically improved by 50-100% with the administration of EVs in the sera collected weekly from the mice in which radiation damage was alleviated, and the administration of RP avoided mortality. Four responsive microRNAs, namely, miR-144-5p, miR-3620-5p, miR-6354, and miR-7686-5p, showed significant expression changes in an array analysis. In particular, miR-144- 5p was expressed only in the EVs of RP-treated TBI mice.

Conclusion: Specific EVs may exist in the circulating blood of mice that escaped mortality with an ARS mitigator, and their endogenous molecules may be the key to the survival of mice with severe ARS.

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NURSING

Moments of Assisting in Disasters for Rural and Remote Nurses

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Introduction: Disasters are increasing globally, in both frequency and severity. Rural and remote areas are disproportionately exposed to disasters, with unequal resources and a significantly reduced health workforce and infrastructure. Nurses play an important role in assisting with and responding to disasters; however, in rural and remote settings, there is limited literature describing nurses' roles or experiences in these events. This study aimed to uncover what it is like for rural and remote nurses when assisting in disasters using a phenomenological approach.
Methods: Sixteen nurses from rural or remote Australia were interviewed about their experiences assisting during a disaster. A phenomenological approach underpinned the study, with descriptive thematic analysis of the data uncovering moments of disaster. These moments provide a shared history across participants, disaster subtypes, and locations.
Results: Eight moments were identified during the nurses' experience assisting in a disaster. These moments consisted of a Prelude, Being notified, Making a decision, Preparing, Initial evaluation of the scene, Stepping into Action, Stepping down, and Lessons through reflection. Within each of the moments, rural and remote nurses tell us how events occurred, how the moments stood out in their singularity, and how they transitioned into another moment, highlighting the uniqueness of each activity and interaction within each moment.
Conclusion: Rural and remote nurses played a significant role in assisting in disasters either in their community or at their place of work. This study highlighted the nuances of their work's geographical location and the activities they are engaged in. It also shows the innate knowledge required of rural and remote nurses in disaster situations. This study provides an in-depth insight into what these nurses do and their experiences, which will help increase disaster awareness, particularly in rural and remote contexts.

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Disaster Nursing Core Competencies, Training and Education in Indonesia: A Scoping Review

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Introduction: Indonesia (WRI 43.50) is ranked second-highest in global disaster risk according to the 2023 World Risk Report (WRR). As of February 2023, Indonesia's healthcare system is supported by approximately 557,000 nurses, according to the Indonesian Health Ministry's health workers' information system (SI-SDMK). These nurses are essential to the country's disaster emergency response efforts, providing critical care and support during emergencies and enhancing the nation's resilience against frequent natural and human-made disasters. This review aims to provide a comprehensive overview of the current practice of disaster nursing in Indonesia.
Methods: A scoping review was conducted using the Joanna Briggs Institute framework. Electronic literature searches of English-language articles on ASEAN countries published between 2019 and 2024 were conducted using Web of Science, CINAHL, PubMed, Scopus, SINTA, and Google Scholar. The keywords of sub-title searching were "nursing", "education", "training", "competencies", "disaster", in combination with the Boolean operators "OR" and "AND". Eligibility criteria were outlined as a priori to guide the literature selection.
Results: 17 articles from 16.551 publications were included in the final analysis. Findings reveal the scope of disaster nursing practice in Indonesia: nursing management in times of disaster, psychosocial handling, and Community Practice during each phase of disaster. Various training and education programs have been designed to improve the disaster nurse practice. However, gaps exist regarding the specific operational application standards for integrating disaster nursing curriculum into nursing formal education.
Conclusion: The insights gathered can guide future curriculum development to advance disaster nursing practice in Indonesia. Future recommendations include developing the operational application framework in the formal nursing education curriculum.

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What It Is Like for Rural and Remote Nurses Assisting in Disasters: A Phenomenological Approach

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Introduction: Disasters are increasing globally in both frequency and severity. Rural and remote areas are often exposed to disasters, with significantly reduced resources and health infrastructure. Nurses play an important role in assisting in and responding to disasters. However, in rural and remote areas,

there is limited literature describing nurses' roles or experiences during these events. The aim of this study was to explore what it is like for rural and remote nurses when assisting in disasters using a phenomenological approach.

Methods: Sixteen nurses from rural or remote Australia were interviewed about their experiences of assisting in a disaster event. A phenomenological approach underpinned the study with interpretive analysis of the existential lifeworlds of participants, used to further explore moments of assisting in a disaster.

Results: The existentials of time, relation, space, and body provided a framework to further explore and analyze how certain moments in disasters were experienced by participants. Through the existential lifeworlds, it illuminated how prioritising time in disasters is key, but limited resources in rural and remote areas complicate this process. Nurses in rural and remote locations work across many settings and environments that expose them to specific risks and stressors. Community relations were significant and affected what nurses did, both positively and negatively. Supporting nurses' psychological and well-being needs after events is important; however, it is still poorly done and can result in nurses leaving the profession or moving on.

Conclusion: Rural and remote nurses play a significant role in disaster response. The new insights into what this experience was like for these nurses highlight the nuances that exist for nurses across broad geographical areas and disaster subtypes. This study provides in-depth insights into what these nurses experienced, increasing disaster awareness, and creating new avenues for further research.

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Enhancing Nursing Students' Disaster Response Knowledge and Skill Attainment in a Complex Interprofessional Mass Casualty Exercise

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Summary: Preparing nursing students for disaster response is increasingly important due to the rising frequency and severity of disasters. Mass casualty exercises expose nursing students to realistic emergency response situations. This presentation describes a complex interprofessional exercise where nursing students practiced disaster response skills during a simulated airplane crash.

The Triennial Airport Disaster Exercise (TADE) was held on October 20, 2023, in Honolulu, Hawaii, USA, and involved multiple federal, state, and local emergency response agencies. Nursing faculty and students from 3 universities participated as emergency responders during the event. To prepare students, the faculty provided them with comprehensive training on disaster management, incident command system, disaster triage, and first aid. Students were placed in various incident roles, including triage team members, field hospital care team members, and disaster management task force leaders. Each role required interprofessional communication and critical thinking skills. A post-exercise survey was conducted to evaluate the TADE as a learning experience, focusing on how the exercise influenced students' knowledge/skill attainment and interest in additional disaster response training.

Evaluation data showed that the TADE enhanced students' understanding of nurses' roles in disaster response and the importance of interprofessional practice. Students were satisfied with their personal performance and the overall exercise. Open-ended feedback described the importance of working in teams to adapt to a chaotic, realistic situation. Areas of improvement included communication and exercise organization.

Few opportunities exist for nursing students to gain exposure to disaster response situations where relevant skills can be practiced. The TADE is an excellent example of an innovative learning experience that offered nursing students invaluable interprofessional disaster response experience and stimulated interest in further disaster response training. By partnering with local response agencies, nursing faculty can develop unique, realistic learning environments for students to practice effective care that can be applied in future disasters.

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The Social Media Disaster

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Summary: Mis/disinformation has long predated the rise of social media, but today's social platforms serve as powerful amplifiers, presenting critical challenges for disaster management. Effective disaster response and mass vaccination campaigns, for instance, depend on public trust—a foundation that is easily undermined by misleading or harmful narratives amplified on social media.

This presentation examines specific instances in which social media has impacted disaster response, highlighting the challenges of ensuring accurate, unbiased messaging. While social media can play a valuable role in crisis communication, it must be carefully managed to remain free from political bias and readily understandable to all audiences. Without proper oversight and an emphasis on factual information, the rapid spread of mis/disinformation during disasters poses heightened risks, especially to marginalized communities.

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Machine Learning-Based Models for Prediction of Emergency Triage Criticality

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Introduction: Emergency departments (EDs) face the critical challenge of quickly and accurately triaging patients, a process essential for prioritizing care and allocating resources effectively. Current triage systems, while functional, often fall short in

rapidly identifying critically ill patients, potentially delaying necessary interventions. This study aims to address these shortcomings by developing a more precise predictive model using machine learning algorithms, thus enhancing the efficiency and safety of triage operations.

Methods: The study employed an exploratory, retrospective observational design to analyze 560,336 emergency triage records from the Fourth Military Medical University's First Affiliated Hospital, collected between 2014 and 2023. The dataset included a mix of structured and unstructured data elements, including demographic information, vital signs, chief complaints, and triage levels. Our methodology encompassed data preprocessing, feature engineering, and text embedding using the Ernie-Health-Zh, a Chinese knowledge-enhanced pre-trained language model. We divided the data into a training set (70%) and a test set (30%) and developed models using Logistic Regression, Random Forest, and XGBoost algorithms.

Results: The XGBoost algorithm emerged as the most effective, achieving a sensitivity of 0.9555 and an AUC value of 0.9956. It showed remarkably high classification accuracy across different severity levels of emergency conditions, with AUC values of 0.9900 for Level I, 0.9680 for Level II, 0.9839 for Level III, and 0.9993 for Level IV.

Conclusion: The predictive model developed in this study significantly improves the accuracy of triage assessments in EDs, ensuring more effective and safer patient management. By enabling faster, more accurate identification of critically ill patients, the model optimizes the use of emergency resources and enhances overall patient outcomes. This advancement holds substantial potential to transform triage practices in emergency medicine, setting a new standard for emergency care efficiency.

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Children in Conflict: The Impact of the Gaza War on the Health and Well-Being of Children

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Summary: This manuscript provides a timely, in-depth examination of the severe health and developmental impacts of prolonged violence on children in Gaza, a topic with critical humanitarian and public health implications. The paper highlights the urgent needs of vulnerable populations affected by the ongoing conflict by analyzing challenges such as health care access, malnutrition, psychological trauma, and disrupted education. It further emphasizes the resilience and adaptability required of healthcare providers and humanitarian organizations responding to these crises. This manuscript is essential for advancing the understanding of pediatric health in conflict zones and can inform strategies for mitigating the effects of war on children.

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Development and Validation of an Intervention Module for Psychological Preparedness in Disaster Response for Emergency Nurses in Mamuju, Indonesia

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Introduction: Nurses, as key healthcare providers, play a critical role in disaster response, especially in resource-limited, disaster-prone areas such as the Mamuju district in Indonesia. Psychological preparedness is vital for nurses to manage stress and trauma while delivering psychosocial support during disasters. Despite its importance, research on psychological preparedness tailored for nurses is limited. This study developed an intervention module to enhance emergency nurses' psychological preparedness, integrating cultural context and professional demands.

Methods: A sequential mixed-method action research design was employed. Phase 1 developed a module with three components across seven sessions: disaster preparedness, nurses' roles, and stress management. Expert reviews validated the module, leading to refinements. Phase 2 tested the module in a pre-post design without a control group, involving 59 emergency nurses across two groups. Participants met the criteria, including at least one year of emergency experience and exposure to the 2021 earthquake. Quantitative data were collected using DASS-21 and the PREPARED tool, and qualitative assessments were conducted during training.

Results: The expert review process indicated that the module adequately addressed key aspects, scoring ≥3 for most components, except Session 7: Stress Management (Physical), general assessment components, and the program introduction. Consequently, adaptations were made to improve these sections. Quantitative analysis (t-tests) in Phase 2 revealed that the first training group demonstrated a greater reduction in depression, anxiety, and stress levels (as measured by DASS-21) compared to the second group. However, the PREPARED tool gain scores showed no significant difference between the two groups. Qualitative findings supported these results, highlighting the diverse sources and impacts of stress, as well as participants' subjective improvements following physical and breathing exercises.

Conclusion: The disaster preparedness module enhances nurses' stress management and readiness, demonstrating its potential to improve psychological preparedness in disaster contexts.

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The Vital Role of International Cooperation in Advancing Disaster Nursing Education

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Summary: Recent global events, including the COVID-19 pandemic, escalating conflicts, and natural disasters, have highlighted the critical role of nurses in disaster prevention, mitigation, response, and community recovery. Despite this, many nursing education programs lack comprehensive disaster preparedness training. This paper explores the importance of integrating comprehensive disaster preparedness into nursing curricula and the value of international cooperation in developing these educational initiatives.

An international collaboration was initiated at the World Association for Disaster and Emergency Medicine (WADEM) conference in Killarney, Ireland, in 2023. This event provided a platform for establishing partnerships between nursing researchers from Australia, Japan, and Israel. Following the conference, a series of Zoom™ discussions were conducted to examine current disaster nursing education practices and explore opportunities for international collaboration.

Our discussions revealed an almost complete lack of significant disaster preparedness training across nursing programs globally. However, there was a strong consensus among participants on the necessity of enhancing disaster nursing education for students. The international collaboration initiated at WADEM 2023 led to the development of a preliminary framework for integrating disaster response competencies into nursing curricula. This framework emphasizes practical skills, scenario-based learning, and cross-cultural understanding in disaster contexts.

This initiative underscores the importance of international cooperation in advancing disaster nursing education. By leveraging diverse experiences and expertise from multiple countries, we can develop more comprehensive and effective training programs for nursing students. Integrating disaster education into pre-service nursing curricula is crucial for building a globally competent healthcare workforce capable of responding effectively to various disaster scenarios. This approach not only enhances the preparedness of individual nurses but also strengthens the resilience of healthcare systems and communities worldwide in the face of disasters.

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Federal Response to COVID-19: A Nursing Perspective

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Summary: Nurses have played a crucial role in the battle against COVID-19. Their roles and responsibilities have evolved significantly, primarily focusing on being liaisons and subject-matter experts to ensure the effective utilization of COVID-19 therapeutics. Nurses engaged with ASPR stakeholders (state/territorial/local health departments, professional organizations, applicable advocacy groups, and private sector partners such as pharmacies).

This presentation aims to outline the key responsibilities and objectives of clinicians during the COVID-19 pandemic response and provides a clear understanding of the roles clinicians play in collaborating with interdisciplinary teams: disseminating accurate information, promoting public health measures, and adapting to evolving guidelines Nurses collaborated with stakeholders and established monoclonal antibody infusion centers. They supported clinical grand rounds and created a collaborative document with FAQs for stakeholders and other federal partners. They created Clinical Implementation Guidelines (CIG), Side by Side (SXS), and Decision Aids (DA).

Their multifaceted roles as liaisons and subject matter experts have not only facilitated the understanding of clinical aspects of COVID-19 therapeutics among healthcare staff but have also fostered collaboration with diverse stakeholders, contributing to a more comprehensive and effective response to COVID-19. One of their primary roles has been that of a liaison, bridging the gap between clinical knowledge and the broader community of stakeholders. They are responsible for disseminating the latest clinical guidelines, sharing best practices, and addressing any emerging challenges in real time.

At the end of this session, participants will be able to:

- Recall three resources nurses created in support of COVID-19.
- State one role nurses had regarding MABs.
- Describe one role nurses had during the ASPR COVID-19 Clinical Rounds.

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Enhancing Emergency Department Efficiency: A Quality Improvement Initiative to Optimize Patient Flow and Critical Care Utilization

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Introduction: Efficient patient flow in emergency departments (EDs) is vital for improving outcomes, particularly for critically ill patients. Despite expanding critical care capacity, inefficiencies in processing times, bed allocation, and patient transfers were observed in the Regional Emergency Medical Center (REMC). This study aimed to evaluate the impact of quality

improvement (QI) interventions on optimizing decision-to-discharge and discharge-to-exit times while enhancing critical care utilization.

Methods: A multi-faceted QI initiative was conducted to streamline patient flow and optimize resource utilization from January to August 2024. The study period was divided into two phases: pre-intervention (January to April) and post-intervention (May to August). Key strategies included educational sessions to enhance staff competencies, the introduction of a "Zone Movement Assessment Tool" to improve patient transfers, and bed allocation based on the Korean Triage and Acuity Scale (KTAS), as well as collaboration with administrative units and local fire departments to expedite admissions. Data on decision-to-discharge and discharge-to-exit times were collected before and after these interventions, alongside metrics on bed utilization rates and financial impact.

Results: The interventions reduced the median decision-to-discharge time from 147 to 130.5 minutes and discharge-to-exit time from 80.25 to 55 minutes. Although not statistically significant ($p > 0.05$), boxplot analysis showed decreased variability, improving consistency. A strong correlation ($r = 0.91$) between the two metrics suggested that improvements in one area positively impacted the other. KTAS Level 3 patient allocation increased from 55% to 82%, and bed turnover nearly doubled from 2.9 to 4.8 times per month. Critical care revenue increased by KRW 302,826,630.

Conclusion: The QI initiative improved ED efficiency, enhancing patient flow and resource utilization. While not statistically significant, the gains in consistency, bed use, and revenue highlight practical benefits. Ongoing monitoring, staff training, and iterative improvements are recommended to sustain these outcomes. Further studies with larger samples are needed to validate these results.

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The Role of Nurses in the Reclassification Exercise of the Japan Disaster Relief Search and Rescue Team (the JDR Rescue Team) - Analysis Based on v. Henderson's Theory of 14 Basic Needs

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Introduction: The medical unit of the Japan Disaster Relief (JDR) Urban Search and Rescue (USAR) team comprises five members, including physicians and nurses, who are responsible for providing medical care to rescued victims and managing team members' health, including rescue dogs'. Unlike other USAR teams, JDR's distinctive feature is nurse participation; however, the specific contributions of these nurses remain unevaluated. This study aimed to assess nurses' contributions during USAR activities using V. Henderson's 14 Basic Needs as an evaluation framework.

Methods: Four nurse researchers with Medical Manager qualifications evaluated nursing care involvement across nine USAR team roles (leadership, rescue workers, structural assessors, handlers, rescue dogs, communication staff, coordinators, medical staff, and local staff). The evaluation used Henderson's 14 Basic Needs, rated on a 5-point Likert scale (1: no attention; 5: very high attention). Statistical analysis employed R software for descriptive statistics and intraclass correlation coefficients (ICC).

Results: The ICC(3,1) demonstrated high agreement at 0.882 (95% CI: 0.849-0.911). Analysis of three domains revealed: "Basic Physiological Functions" averaged 4.95 (SD=0.224) across all roles; "Environmental Adjustment" averaged 4.56 (SD=0.63), with human roles scoring higher (mean 4.75-5.0) than rescue dogs (mean 4.0); "Social Aspects" showed lower scores (mean 3.9, SD=1.11), particularly for rescue dogs (mean 2.8). "Beliefs and values" scored highest for local staff (mean 5.0) compared to other roles (mean 1.0-2.0).

Conclusion: Nurses' contributions demonstrate a hierarchical priority system emphasizing physiological function management while maintaining environmental adjustment attention. Although social aspects scored lower, this reflects the acute phase of disaster response, with high scores for local staff in "beliefs and values," highlighting cultural considerations in international operations. The findings demonstrate that nursing practice in USAR activities encompasses fundamental nursing elements while prioritizing life-sustaining care, enhancing overall team performance through physician collaboration.

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A Practical Report of a Disaster Nursing Program for Nursing Students

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Summary: This practical report aims to introduce a Disaster Nursing Program for Nursing Students (DNPNS) at the Tachikawa Faculty of Nursing, Tokyo Healthcare University. The DNPNS is a four-year program. As a first step in the DNPNS, students learn basic disaster nursing and medicine, such as the history of disasters in Japan, how to handle corpses, and triage methods. In the second step, students acquire knowledge of the laws related to disasters and the various phases of disaster management. They deepen their understanding of disasters from meteorological and architectural perspectives. Experts in these fields are invited as lecturers for each class.

In Step 3, lectures and exercises are conducted on community disaster prevention, evacuation center management, and responses to special disasters. For community disaster prevention, students can research disaster prevention plans from

various local governments and gain insight into the reality of community-based disaster prevention by presenting unique prevention strategies. They have also conducted a simulation of shelter management using cards, addressing issues that Japanese evacuation centers may face, including potential health problems during an influx of disaster victims. Additionally, students receive practical instructions from Disaster Medical Assistance Team(DMAT) members on secondary triage at first-aid stations and practice these skills. Through these exercises, the students can apply the knowledge acquired in Steps 1 and 2 to solve practical problems.

Finally, in the fourth step, a five-day practical training program is conducted. The program includes five key components: tabletop exercises for handling numerous disaster victims as hospital nurses, mass casualty incident triage simulation, shelter setup and management simulation, initial response training for disaster situations, and participation in a Disaster Base Hospital drill, where they act as either victims or nursing staff. Through these programs, focus has been devoted to developing practical disaster-nursing skills.

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Role and Mandate of Nurses in Disasters in German-Speaking Countries – A Modified Delphi Study

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Introduction: Given the global increase in disasters, the International Council of Nurses calls for every nurse to be a disaster nurse, and the Royal College of Nurses in the UK even considers nursing to be a safety-critical profession. In the DACH countries (Germany, Austria, and Switzerland), however, the role and mandate of nurses in disaster preparedness and response have so far received little attention. This study aimed to investigate this observation from the perspective of experts.

Methods: A modified multi-stage Delphi study was conducted. The initial stage involved an in-person roundtable symposium to identify positions and assumptions on nurses' roles and mandates in disasters in the DACH countries. This was followed by three successive and increasingly standardized online surveys (stages 2-4). Originally consisting of experts from nursing, disaster relief organizations, politics, the armed forces, and the education sector, the group was gradually expanded to include experts from related fields and professions (from n = 28 to n = 74).

Results: Participants considered it highly relevant to clearly define the role and mandate of nurses in disasters. A consensus was reached that nurses in the DACH countries should play a key role in maintaining the health and safety of the population. To enable nurses in German-speaking countries to fulfil their safety-critical mandate before, during, and after disasters, experts with a nursing background called for the inclusion of nurses in decision-making bodies. However, the participants believed the development of competencies in disaster nursing must be improved at all levels.

Conclusion: The modified Delphi study showed that a clarification and an agreement must be reached on the role and mission of nursing in disasters in the DACH region. Realizing the safety-critical potential of nurses before, during, and after disasters requires addressing both policy and educational gaps in the three countries.

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The First Responder Training for Nurses under High-Risk Environment – a Non-Profit Organization Case Study

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Summary: In environments impacted by extreme disasters, the prevalence of human-made disasters and high-risk situations has been increasing. It has become an important issue to enhance situational awareness and strengthen response capabilities for medical professionals, building upon their existing expertise, from the perspective of NGOs. From 2022 to 2024, the organization held over eight training sessions with more than 150 participants, lasting from 2 to 5 days each. All participants were healthcare professionals. The training included situational awareness, basic battlefield injury management, and advanced damage-control resuscitation, combined with highly realistic, scenario-based exercises to enhance situational awareness and response capabilities.

In post-training interviews, all participants reported that the training helped them develop new logical thinking and perspectives. The scenario-based exercises enhanced their response speed and adaptability. The skills acquired were applicable not only in high-risk environments but also in their daily work settings. High-risk environments are not limited to humanitarian conflicts; they can also occur in everyday settings. Given the current global instability, similar training courses conducted by NGOs can effectively improve the situational awareness and response abilities of healthcare professionals.

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How Nurses Contribute to Global Health System Resilience: A Scoping Review of Empirical Studies

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Introduction: The World Health Organization (WHO) has emphasized the need for the development of resilient health systems to meet current and future disaster readiness needs. The WHO has also emphasized mechanisms that will achieve this goal, including a focus on strengthening the global nursing workforce to achieve the Sustainable Development Goals. However, there is limited synthesized research focusing on

the contributions of the nursing workforce in developing and fostering health system resilience globally.
Methods: Using Joanna Briggs Institute methodology for scoping reviews, three databases (PubMed, CINAHL, and Scopus) were searched for publications from 2006 until April 2024. English-language research studies and quality or process improvement projects were included. Systematic reviews, as well as studies focused on individual resilience, were excluded. Studies meeting search criteria were exported and screened first by title and abstract, and subsequently underwent a full-text review using Covidence software. Quantitative and qualitative data from studies meeting inclusion criteria were extracted and analyzed according to study objectives to create a narrative synthesis. This study was registered in the Open Science Framework on May 28, 2024.
Results: Eleven articles were included of the 795 total retrieved. Overall, there is limited discussion of the nursing workforce in health system resilience. Eight of the 11 articles (73%) suggest that the nursing workforce is involved in operationalizing resilience during disasters, 10 articles (91%) call for nurses to be leaders in policy and the development of resilient health systems, however, this review found zero reports in the literature of the nursing workforce's role in the planning, development, and leadership of resilient systems.
Conclusion: Nurses are essential to resilient health systems, however, there is limited research examining the nursing workforce and its contributions to resilient health systems, particularly within disaster contexts. More targeted research on nursing workforce contributions to achieve resilient health systems is needed.

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Coordination of Nurse Dispatch during the 2024 Noto Peninsula Earthquake

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Summary: During domestic disasters, emergency medical support by nurses includes various forms of assistance, such as participation in DMAT teams, disaster support nurses dispatched by nursing associations, and independent deployment by NGOs and NPOs. Following the Noto Peninsula Earthquake on January 1, 2024, the Health, Medical, and Welfare Coordination Headquarters of Ishikawa Prefecture organized the dispatch of nurses to support medical institutions, social welfare facilities, and evacuation shelters in the disaster-affected areas.

The aim of this study is to identify challenges in coordinating the dispatch of nurses during the Noto Peninsula Earthquake in 2024.

The coordination of nurse dispatch needs was conducted by personnel from Ishikawa Prefecture, the Japan Nursing Association, and the Ishikawa Nursing Association, in collaboration with DMAT staff experienced in nurse dispatch. Unlike previous disasters, where nurses were primarily dispatched to hospitals and evacuation centers, the Noto Peninsula Earthquake required deployment to temporary shelters outside the affected area and to social welfare facilities in the Noto region, where the aging population exceeded 50%. This led to prolonged coordination efforts for long-term dispatch to hospitals and welfare facilities. Information for assessing dispatch needs came from local personnel, municipalities, and systems such as EMIS, D24H, and J-SPEED.

Although the response to the Noto Peninsula Earthquake was confined to a single prefecture, anticipated disasters like the Nankai Trough Earthquake or a direct hit on a metropolitan area would affect multiple prefectures, complicating coordination efforts. The variability in the number, duration, and locations of nurse dispatch depends on the personnel involved in coordination, underscoring the importance of training to manage nurse dispatch effectively in large-scale disasters.
"Outside the Box"

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"OUTSIDE THE BOX"

Structured Interview Matrix: A Tool for Meaningful Community Engagement and Large Group Consultations in Public Health Emergency Preparedness

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Summary: Inclusion, consultation, engagement, and priority-setting are common recommendations for an all-of society approach to disaster management. In practice, these criteria can be difficult to fulfill with traditional focus groups. The Structured Interview Matrix (SIM) is an engaging and solution-oriented consultation method to facilitate discussions with large, diverse groups (up to 40 people). It aligns with the principles of community-based or community-led, participatory research projects, and can be used for either in-person or virtual participation. The purpose of this presentation is to explain the SIM method and how it has been used in disaster research and large group consultations.

Given the involvement of participants, ethics approval is required for most research-related SIM consultations. For each example in this presentation, ethics approval was received, and participants signed a consent form before participation. Each SIM session is divided into three steps: 1) 1:1 interviews by participants; 2) small group deliberation to synthesize information from step 1; and 3) large group discussion of the findings and recommendations. Steps 2 and 3 are audio-recorded and analyzed with the field notes from interviews in step 1.

The stepwise progression of the SIM method balances power within the group and ensures individual voices are integrated into the discussion, regardless of functional ability or organizational role. Further, it facilitates engagement through interactive activities, which create opportunities to network, exchange information, and strengthen community or organizational relationships.

This presentation provides an overview of the SIM method and select examples from over 100 disaster-related applications, as well as information about how to access the facilitator manual, an open-access community tool. The intent is to prompt out-of-the-box thinking and solutions for conference attendees working with diverse communities or within complex organizations and provide resources for how to use the SIM method in different contexts.

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No Pulse, Yes Heart Motion? a Discussion on Management of Ultrasound Detection of Pulseless Rhythm With Echocardiographic Movement in Prehospital Cardiac Arrest: A Case-Series

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Summary: Out-of-hospital cardiac arrest (OHCA) presents multiple challenges for prehospital providers. The management of cardiac arrest is of the top priority for prehospital providers and medical directors alike, with the focus always on ways to improve management of this condition. To improve OHCA outcomes in a large urban ground-based EMS service, a Point of Care Ultrasound (POCUS) program was developed and implemented. This program highlights the utility of POCUS during pulse checks as well as the identification of cardiac motion during resuscitation. A unique condition in cardiac arrest, identified as pseudoPEA or Pulseless Rhythm with Echocardiographic Motion (PREM), occurs when Pulseless electrical activity (PEA) is noted on the monitor, no palpable pulse is noted, but there is cardiac motion on POCUS. Since this EMS POCUS program started one year ago, there have been multiple cases of PREM noted. In this series of patients, resuscitation efforts would have been terminated in the field per traditional EMS guidelines without the use of POCUS. This led to the creation of one of the first protocols in an American ground ambulance service focused on the treatment of this condition. This tabletop presentation offers an opportunity to discuss this unique condition as well as management strategies to treat this condition, while reviewing a series of cases from the EMS POCUS program.

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From Tradition to Transformation: Gender Dynamics in Central Asia's Disaster Management

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Introduction: Central Asia, a region characterized by seismic activity, extreme weather conditions, and diverse cultures, presents complex gender dynamics within disaster response and recovery efforts. Despite longstanding traditions that often relegate women to secondary roles, recent years have seen a shift driven by policy changes and educational initiatives. This study analyzes gender representation in disaster response in Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, and

Turkmenistan, focusing on how cultural factors influence these roles. The aim is to provide a data backed comparison of participation rates, leadership presence, and community impact, offering insights into how gender inclusivity affects disaster resilience.
Methods: A detailed content analysis was used, examining the various publicly available sources, including government documents, reports from emergency agencies, media coverage, and social media posts published in Kazakh, Kyrgyz, Russian, and English languages. The dataset spanned the past decade, with a particular focus on between 2018 and 2023. Quantitative data on gender participation were extracted and analyzed alongside qualitative information regarding societal attitudes and cultural practices.
Results: In Kazakhstan, women comprised 20% of formal disaster response teams, with urban participation boosted by educational campaigns. Notably, women held leading roles, including department heads at the Ministry for Emergency Situations, and emergency drill participation rose by 35% from 2020 to 2023. In Kyrgyzstan, 40% of first responders were women, though leadership remained male-dominated. Uzbekistan saw moderate gains in women-led awareness programs, while Tajikistan and Turkmenistan had only 10% female participation in formal roles due to patriarchal norms. Social media analysis highlighted traditional views, showing support for inclusive policies but resistance in rural areas.
Conclusion: The study underscores notable progress in women's disaster response involvement in Central Asia, driven by educational programs and inclusive policies. Yet, deep-rooted cultural norms still hinder leadership roles in more traditional areas. Expanding targeted, culturally adaptive training can enhance regional resilience.

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First Aid Complexity Engagement Tool (FACET) a Novel Tool for Disaster Relief Charities to Identify First Aid Requirements Within Team Composition to Ensure First Aid Self-Sufficiency

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Introduction: Taskforce Kiwi is a veteran-led volunteer disaster relief charity that responds to disasters in Aotearoa/New Zealand and internationally. TFK aims to help disaster-affected communities in their recovery, promote veteran psychosocial well-being, and ensure self-sufficiency in first aid (without burdening affected communities). FACET is used when initially defining skill requirements for the deploying team. The tool will be available for use by other organizations.
Methods: Each deployment must have an appropriate team composition with relevant first-aid skills for the deployment's injury risk. Volunteer time is valuable, and the use of skills should be optimized. Medical oversight via telehealth and standing orders for essential medications will be a force multiplier of skills for the less qualified.
FACET requires the following data:
* Likely state of disaster on arrival
* Location
* Duration
* Likely activities to be undertaken
* Effectiveness/Availability of local Emergency Services
* Local Emergency Services ETA if called
Using a series of predefined drop-down boxes, the data is evaluated to determine the required competencies to complete the activities and the severity of possible injuries, and then identifies the first aid competency level needed.
Results:
The FACET identifies the minimum first aid competency required. Namely:
* Basic First Aid
* Disaster (Austere) First Aid (in house curriculum and training)
* Veteran Defence Force Medics
* Registered Health Care Professionals
Thus, relevant potential team members can be quickly identified.
Conclusion: FACET has been verified retrospectively across several domestic and international deployments, aligning with the actual first aid inputs required. FACET is an objective tool (spreadsheet/mobile phone app) to document and inform team composition for disaster recovery deployments of volunteers, ensuring appropriate first aid competencies commensurate with the austerity and hazards of the situation. FACET objectively supports what might otherwise only be a "gut feeling" and provides objective data for ongoing risk and hazard analysis.

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Disaster Entertainment and an All-of-Society Approach to DRR

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Introduction: Disaster films are a popular form of entertainment. Large-scale pandemics, climate-related disasters, technological and man-made disasters, and comets on intersecting paths with Earth are popular topics in this film genre. But what roles do (or can) disaster films play in an all-of-society approach to disaster risk reduction (DRR)?
Methods: Disaster films were chosen through a systematic search on Rotten Tomatoes, IMDb, and ChatGPT. After screening 111 trailers, 32 films were obtained from streaming networks and online purchases. The inclusion criteria for screening the films included a focus on realistic disasters, examples of resilience and vulnerability, and representation of high-risk populations. A team of reviewers screened the trailers and conducted content and thematic analysis for each included film.
Results: Preliminary analysis highlighted how disaster films can support an all-of-society approach to disaster preparedness, response, and recovery through examples of resilience, information to enhance awareness, and modeling attitudes and actions

underpinned by social justice. Mis/disinformation, confusing messaging, and industry-specific language are important considerations for population health and accurate risk communication through film.
Conclusion: Disaster films represent unique opportunities for public education to promote resilience and enhance DRR. This presentation will highlight how disaster entertainment can be integrated into an all-of-society approach to support DRR, emphasizing important considerations for disaster risk messaging and inclusive practice.
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Reflecting on a Decade of MCRISP: Leveraging Community Child Care Center Partnerships to Advance Pediatric Biosurveillance and Infectious Disease Research

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Introduction: Child care centers are vital hubs for monitoring pediatric respiratory and gastrointestinal illness transmission. The Michigan Child Care Related Infections Surveillance Program (MCRISP), established in 2013, is a key component of local public health surveillance. MCRISP captures symptoms often missed by traditional hospital and clinic-based biosurveillance. Child care providers (CCPs) submit illness reports, enabling enhanced local illness surveillance and improving communication through visual dashboards. MCRISP is a free-to-use and novel community-based biosurveillance and research tool.
Methods: MCRISP collected daily illness reports from ~25 centers in Washtenaw County, Michigan, focusing on gastroenteritis, respiratory infections, and rashes. CCPs enter non-identifiable data categorized into four age groups: 0-12 months (infant), 13-35 months (toddler), 36-59 months (preschool), and 60 months and older (kindergarten/1st grade). Data from 2013 to 2024 were analyzed using descriptive statistics. Reports from October 1, 2014, to September 30, 2024, were classified by symptoms and diagnoses into Gastrointestinal (GI), Respiratory, Rash, and Other illnesses. Seasonal trends and epidemic curves were evaluated based on illness counts to identify patterns and outbreaks.
Results: Over 22,000 reports were analyzed across ten seasons. Preschool-aged children (35-59 months) were the highest reporting group (13,612 cases). Respiratory illnesses were most prevalent (16,568 reports), with viral cases comprising 10,521. GI illnesses accounted for 4,923 reports, while rashes totaled 1,392 cases. Certain respiratory conditions, typically treated with antibiotics, were reported 1,092 times. Confirmed or suspected COVID-19 cases based on symptomatic children with positive family members totaled 578 cases (2020 to 2024). MCRISP's early detection provided critical lead time for public health responses. MCRISP was leveraged for two national viral respiratory pathogen studies (influenza and COVID).
Conclusion: Marking a decade of surveillance, MCRISP serves as an effective and novel platform for data collection and dissemination. MCRISP models community-based surveillance and provides an innovative tool for research, essential for moving public health preparedness forward.
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ExposureNet – the Global Network Building Evidence About Disaster and Crisis Exposure and Its Health Effect to Improve Healthcare Responses – a WADEM Inspired Initiative

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Introduction: At the WADEM 2023 Killarney congress, a new presentation format involving a tabletop-style discussion was offered. One abstract accepted for this format described a study comparing the capture of patient hazard exposure information by health and medical responders at six large international natural hazard disasters. The original objective of submitting the abstract was to present the study as an oral presentation, demonstrate the universal lack of patient hazard-exposure assessment, and advocate for urgent change in the recommended emergency minimum patient dataset.
Methods: Round table participants joined a facilitated discussion to identify and share similar challenges from their fields of expertise and collectively explore innovative ideas to solve challenges. The examples and network ideas were collated, and agreement was sought to follow up with participants after the session.
Results: Based on feedback from round-table participants, ongoing conference discussions, and post-conference communications with a wider healthcare network, an initiative called ExposureNet was created using resource support of philanthropic actors. Since its launch at the World Congress of Epidemiology in Cape Town in October 2024, hundreds of disaster and emergency workers from across high and low-income country domains have registered their interest in joining the network. The purpose of ExposureNet is to connect and support disaster and emergency practitioners in building the evidence base about patterns of illness/injury from exposure to events and identify interventions, their timeliness, and the quality of care necessary to protect vulnerable people.
Conclusion: WADEM's importance and leadership in advancing disaster health and medicine policy and practice cannot be underestimated. Without the change in conference format, the ExposureNet initiative would not exist. Now, a worldwide community of disaster health and medicine practitioners is supporting each other to build evidence about the relationship between people's exposure to crises and disaster events and the patterns of injury and illness they cause.
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Finding Another Gear: Driving Disaster Medicine Beyond the Sendai Framework with Planetary Health

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Summary: Universities have a unique opportunity to lead the evolution of disaster medicine by reorganizing their institutional frameworks to address the interconnected challenges of environmental sustainability and resilience. This submission uses the Johns Hopkins Institute for Planetary Health and the Planetary Health Alliance as a case study to demonstrate how reframing academic and operational structures can create new pathways for advancing disaster medicine programs.

Adopting a Planetary Health framework, the Johns Hopkins Institute for Planetary Health has aligned its research, education, and clinical initiatives to address the systemic drivers of disasters, such as climate change, biodiversity loss, and environmental degradation. By integrating environmental determinants of health with interdisciplinary collaboration, this approach has fostered innovation and expanded the scope of disaster medicine.

Key outcomes include leveraging ecological and environmental data for predictive modeling, incorporating nature based solutions into disaster preparedness, and enhancing cross-sector partnerships with public health, engineering, and policymaking stakeholders. These strategies build on the foundation of the Sendai Framework for Disaster Risk Reduction, propelling disaster medicine into a new era that emphasizes prevention, sustainability, and equity.

This report highlights how Planetary Health principles can act as a catalyst for transforming disaster medicine programs, equipping them to address cascading risks and systemic vulnerabilities in a rapidly changing world. By finding "another gear," universities can drive disaster medicine forward, offering a replicable blueprint for institutions to align their missions with the complexities of a resilient and sustainable future.

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The Early Warning and Response Systems in Syria: A Functionality and Alert Threshold Assessment

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Introduction: The protracted conflict in Syria has led to a fragmented health system, resulting in two distinct syndromic surveillance systems: Early Warning and Response Network (EWARN) and Early Warning and Response System (EWARS). Given this unique epidemiological context in Syria, there is a need for continuous evaluation of these Early Warning Systems (EWS) to improve their effectiveness in detecting and responding to public health threats.
Methods: A retrospective analysis of EWARN and EWARS surveillance data assessed functional characteristics. WHO alert thresholds for measles, acute bloody diarrhea (ABD), acute jaundice syndrome (AJS), and severe acute respiratory infections (SARI) were tested using three methods. Sensitivity, specificity, and Youden's index determined threshold suitability for each syndrome.
Results: The annual average number of reported cases was 1,140,717 for EWARS and 10,189,415 for EWARN. The study found that the optimal alert thresholds varied among the different diseases. The percentile method showed promising results, demonstrating good sensitivity and specificity. For measles, the 85th percentile (P85) threshold had the best results (Youden's index = .443), whereas for ABD it was the P75 (Y= .532), and for SARI it was P90 (Y= .653).
Conclusion: The study supports the use of adaptable disease-specific alert thresholds, such as the percentile approach. Further research is needed to develop statistical methods that can be applied across various EWS in conflict contexts.

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A Case Report of Acute Anticholinergic Intoxication Following Intentional Cyproheptadine and Alcohol Overdose

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Summary: This is a 45-year-old female patient who presented to the emergency department with altered mental status, pinpoint pupils, and tachycardia after intentionally ingesting a large quantity of the antihistamine cyproheptadine and alcohol. The patient was treated with physostigmine, a cholinesterase inhibitor, which improved her clinical condition. This case highlights the importance of recognizing and managing acute anticholinergic intoxication, a potentially life-threatening condition.
Case Presentation:

The patient, a 45-year-old female, was brought to the emergency department due to a poor response and the presence of "sleeping pills" (cyproheptadine 2 mg) and alcohol bottles. On arrival, she presented with confusion, decreased responsiveness, pupils dilated, and tachycardia. Physostigmine was administered for suspected anticholinergic intoxication. After physostigmine, the patient became more conscious, oriented, and alert, though still fatigued. She reported taking over 10 tablets of cyproheptadine and consuming alcohol due to insomnia, denying suicidal intent. Physical examination revealed the patient to be sleepy but oriented, with bilateral dilated pupils. Vital signs were notable for hypertension and tachycardia. Laboratory investigations, including arterial blood gas and electrocardiogram, were unremarkable. Based on the clinical presentation and history, the impression was acute anticholinergic intoxication. The patient was admitted for further management and monitoring.

Anticholinergic intoxication can result from the overdose of various medications, including antihistamines. The administration of physostigmine helped to reverse the patient's anticholinergic symptoms. Ongoing management in the observation unit was crucial to monitor for potential complications and address any mental health concerns.

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Use of a Mouthpiece During Nebulizer Therapy and Impact on Lung Delivery and Environmental Contamination

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Introduction: Bioaerosols significantly contribute to infection transmission. Nebulization increases the degree of fugitive aerosols and is limited in use during the COVID-19 pandemic. However, nebulized medications may be an important part of treatment and a transmission risk when infectious bioaerosols are present. Allowing for nebulized medication delivery while mitigating environmental contamination permits safe transport and in-hospital treatment without airflow restrictions. Using a novel device, preliminary data assessing the efficacy of nebulized DNA and environmental fugitive aerosols are presented.
Methods: A novel device was 3D printed and attached to a simple facemask on a manikin. The vacuum port of the device was attached to the wall suction. Reprogramming a cough assist machine, bioaerosol was pushed/pulled through the pulmonary tree of a manikin while nebulized medical aerosol was 'inhaled'. Distinct DNA-coated 1 micrometer spheres were nebulized from the manikin's lungs and face mask medication port at a rate of 8L/min. Sampling sites included air sampling at 50 L/min, the face mask surface, and an inline filter to capture scavenged and lung DNA. Standard cycle threshold detection curves were obtained for each DNA oligo used.
Results: Sampling comparing DNA delivery with and without a mouthpiece demonstrated a 6-fold higher 'medication DNA' uptake with a mouthpiece. Similarly, a 16-fold reduction in scavenged 'medication DNA' into the vacuum system occurred with a mouthpiece. More than 99% of the nebulized DNA was scavenged with and without a mouthpiece without reaching the environment.
Conclusion: Using a model to simulate the generation of inspiratory and expiratory pressures, this device, in combination with commonly available transport and hospital equipment, was successful in preventing environmental contamination when nebulizing solutions coated with DNA. It is important to add a mouthpiece when concurrently administering nebulized medications to maximize medication availability to the lungs. Future studies should reproduce these results and discuss a generalizable model to test medication delivery and environmental impact.

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Association of Prehospital Time with Traffic Injury Severity – Experiences From a Level-I Trauma Centre in Taiwan

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Introduction: Research has reported that prehospital time and distance play a crucial role in determining patient outcomes such as mortality or injury severity. This study aimed to investigate the association of prehospital time with traffic injury severity.
Methods: This study employed a retrospective analysis of data from January 1, 2016, to December 31, 2022, focusing on 5,022 traffic crash patients admitted to a Level-I trauma center and transported by EMS in Taiwan. The variables included were EMS prehospital time (response, on-scene, and transport times), patient demographics (age and gender), crash time, and injury severity score (ISS). Patients with ISSs ≥ 9 were classified as sustaining killed or serious injuries (KSIs). Chi-square tests identified risk factors, and logistic regression models estimated the adjusted odds ratio for KSI.
Results: The results revealed that an increased minute of prehospital time was associated with an increase in the risk of KSI by 2%. A response time over 4 minutes raised the KSI risk by 80%, while on-scene and transport times of 7 minutes or more increased the risk by 98% and 87%, respectively. Total prehospital time exceeding 21 minutes led to a 97% higher KSI risk. Logistic regression models revealed that crashes between 00:00 and 5:00 had a 70% higher KSI risk, with elderly individuals at midnight facing a fivefold greater risk than other age groups.
Conclusion: Study findings support the notion that enhancing EMS efficiency may provide crucial clues for improving trauma care programs. In addition, strategic deployment of emergency personnel during high-risk early morning hours can be beneficial in dealing with serious traffic accident injuries.

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The Scorecard Approach: Identifying and Prioritizing Strategies for Strengthening Public Health System Resilience

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Introduction: Shifting environmental, social, and political climates demonstrate the need to systematically identify, prioritize, and scale local strategies for strengthening public health system resilience. The UNDRR Scorecard approach can address this challenge. Specifically, the Public Health Scorecard (Scorecard), launched in April 2020, has been used in diverse settings and translated into 15 languages. This has expanded to food security, education, and rehabilitation

services. When coupled with the Delphi process, this approach achieves consensus on implementable grassroots strategies.
Methods: The Scorecard has been applied by co-authors in 20 locations across nine countries. This included pre-disaster, post-disaster, and a conflict setting covering five thematic areas, public health (n = 15), food security (n = 4), education (n = 4), and rehabilitation services (n = 1). This method requires workshop participants to discuss and then individually complete the Scorecard questions, organized around the Ten Essentials for Making Cities Resilient. Upon consensus, participants develop and prioritize actions. The Delphi process was used for 13 workshops conducted as part of a project funded by the WHO Kobe Center. This method allowed further synthesis of recommendations based on impact and feasibility.
Results: The WHO Kobe Centre funded project promulgated further application of the Scorecard method to help guide the recovery of public health systems after the Türkiye earthquakes of 2023. This also led to the expansion of this approach into other sectors such as education and food security. Also, almost two years after the application of the Scorecard in Waco, Texas, United States, the local health district was awarded the best in Texas. The Scorecard approach can also be modified towards assessing emerging issues, which was demonstrated by application in Lviv, Ukraine, to identify and prioritize strategies for strengthening rehabilitation services.
Conclusion: The Scorecard approach is now a feasible methodology for identifying and prioritizing strategies for strengthening public health system resilience in conflict, disaster, and other crisis settings.

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A Case of Cerebral Venous Sinus Thrombosis with Venous Hemorrhage in a Patient with Diabetic Ketoacidosis

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Summary: A 42-year-old female with no significant past medical history presented to the emergency department (ED) with altered sensorium. Her spouse reported confusion and left-sided hemiparesis. Examination revealed right gaze deviation and left hemiplegia. Brain CT imaging showed an acute intraparenchymal hematoma in the right frontal lobe, with hemorrhage along the right cerebral convexity and a resultant leftward midline shift. Due to the hemorrhage pattern involving multiple arterial regions, a CT brain venogram was performed, revealing multiple cerebral sinus thromboses. She was also found to have diabetic ketoacidosis (DKA). Anticoagulation was initiated, and she was treated for DKA and admitted to the high-dependency unit for monitoring. During her stay, a repeat CT brain scan was performed following a drop in GCS, which showed stable hemorrhage but a new infarct in the right occipital and frontal lobes. She subsequently underwent cerebral venous sinus thrombectomy. Thrombotic and autoimmune screenings were normal. She recovered with residual left-sided hemiparesis and was referred to a rehabilitation hospital and discharged with lifelong anticoagulation.

Managing CVST with venous hemorrhage presents challenges, as anticoagulation may exacerbate the hemorrhage. This patient's initial plain CT brain hemorrhagic findings were not initially recognized as a possible CVST by the neurosurgeon, and after reviewing the CT images by the ED physician, further discussion with the radiologist was done, and a CT venogram was performed. Although plain CT brain scans are widely used, ED physicians must recognize findings suggestive of CVST. While CVST is treated with anticoagulation, endovascular thrombectomy may be a viable option for selected patients in centers equipped with this capability.

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Reducing Appointment Time to Orthopaedic Specialist Outpatient Clinic for Emergency Department Patients with Fractures and Dislocations

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Summary: Increasing patient visits to the emergency department (ED) at Sengkang General Hospital led to overbooking in the orthopedics specialist outpatient clinic. This delayed follow-up care for fractures and dislocations, which in turn impacted timely patient management. A quality improvement project aimed to increase the percentage of ED patients with fractures and dislocations who receive follow-up appointments within two weeks to 80%.

An initial audit revealed that only 20% of patients received follow-up appointments within the target timeframe. Root cause analysis identified several key issues: junior ED doctors, with varying levels of system-based knowledge, often overbooked appointments; communication between doctors and administrative staff was inconsistent; and demand for orthopedic appointments exceeded availability.

Two Plan-Do-Study-Act (PDSA) cycles were implemented. PDSA 1 focused on reducing demand through appropriate referrals and scheduling duration, while PDSA 2 increased clinic availability by adding more appointment slots. Together, these interventions led to a sustained positive change. After PDSA 1, performance initially improved but then declined. PDSA 2 produced a statistically significant, sustained improvement, with performance stabilizing above the targeted 80%.

Regular audits continually track progress, and new doctors are provided guideline briefings. Patient satisfaction feedback is also being reviewed. This PDSA approach could be applied to similar specialist clinic appointment wait times issues.

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Quality Improvement Interventions to Reduce the Emergency Department Length of Stay (EDLOS) in the Green Zone- a Mixed Method Study

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Introduction: Emergency Department Length of Stay (EDLOS) is a critical indicator of overcrowding, which has become a significant public health concern worldwide. Overcrowding reduces the quality of care, increases the risk of medical errors, causes dissatisfaction among patients, and causes burnout in healthcare workers. There is limited literature on implementing and evaluating solutions to prolong EDLOS. This study aims to assess the impact of quality improvement initiatives for reducing the length of stay in the Green Zone of the Emergency Department of a tertiary-level hospital and their effect on patient satisfaction. The objectives were to explore the health-related issues and challenges encountered by patients in green zones, to develop feasible interventions to address these problems, and to assess the effectiveness of quality improvement interventions in reducing EDLOS.
Methods: This was an exploratory mixed-method study design with purposive sampling. A multidisciplinary quality improvement (QI) team was formed, and process flow diagrams and fishbone analysis were used to identify factors contributing to prolonged triage waiting time. Orientation sessions empowered staff, and patient experiences were explored through interviews. Change ideas were tested iteratively, focusing on feasible interventions to reduce waiting time. The successes and challenges of each change attempt were documented, focusing on lowering consultation delays as a primary factor contributing to prolonged EDLOS.
Results: There was a significant decrease in median EDLOS from 170 to 149 min (p 0.038) after intervention. The median number of patients who stayed for more than 120 min, 360 min, and 600 min was decreased from 415 (IQR 391- 478) to 362 (IQR 322-374) (p 0.011), 144 (IQR 104-164) to 91(IQR 82-119) (p 0.066), and 65 (IQR 37-67) to 26 (IQR 22-33) (p 0.066), respectively.
Conclusion: This quality improvement study effectively reduced patient stay duration in the ED through targeted interventions, improving workflow and efficiency.

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Defying Contraindications: Successful Use of Non-Invasive Ventilation in Acute Pulmonary Edema with Severe Acidosis and Altered Mentation

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Summary: This case demonstrates the successful use of non-invasive ventilation (NIV) in managing acute pulmonary edema, complicated by altered mentation, severe acidosis, mixed hypercapnic respiratory failure and metabolic acidosis with hyperlactatemia. A 70-year-old female with a history of ischemic cardiomyopathy, diabetes mellitus, hypertension, hyperlipidemia, and previous stroke presented with worsening shortness of breath over two days, which acutely worsened one hour before her Emergency Department visit. Upon arrival, her oxygen saturation was 44% on a non-rebreather mask, and she had an altered mentation (Glasgow Coma Scale E1V1M4). Clinical examination revealed acute pulmonary edema with bilateral lung crepitations and lower limb edema. Arterial blood gas (ABG) showed severe acidosis (pH 6.93), hypercapnia (pCO2 59, pO2 73), low bicarbonate (9), and hyperlactatemia (lactate 12.12).

She was started on biphasic positive airway pressure (BiPAP) with an inspiratory positive airway pressure (IPAP) of 15 cm-H2O, expiratory positive airway pressure (EPAP) of 5 cm-H2O, and FiO2 of 100%. Following 40 minutes of NIV, her oxygen saturation and mentation improved (E4V5M6), with significant ABG improvement (pH 7.28, pCO2 32, pO2 311, bicarbonate 16, lactate 7.35). She was admitted to the high-dependency unit, successfully weaned off NIV within 24 hours, and transferred to the general ward the following day.

While NIV is essential for managing acute heart failure and pulmonary edema, its use is challenging in patients with severe acidosis (pH < 7.2) and altered mentation. Acidosis can indicate respiratory failure, and altered mentation raises concerns about the patient's ability to tolerate the NIV mask or protect their airway. However, this case demonstrated that despite these contraindications, careful monitoring led to rapid improvements. This underscores the importance of reassessment soon after NIV initiation, as it can still be effective if improvement is seen, avoiding intubation and improving patient outcomes.

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The 1923 Great Tokyo Earthquake: An Overview of the Medical Response

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Summary: This presentation provides an overview and context of the medical response to the Great Tokyo Earthquake (a.k.a., The Great Kantô Earthquake) and fire that destroyed much of Tokyo and Yokohama 101 years ago. At 11:58 am on September 1, 1923, a magnitude 7.9 quake 23km beneath Sagami Bay impacted Tokyo and the surrounding six prefectures. Although tsunamis hit coastal areas over 100km away, the main cause of mortality was fires in urban centers. These fires quickly spread throughout the wooden environment and eventually combined into firestorms. Of the estimated total 105,000 deaths, 92,000 are believed to be fire-related; over 85% of Tokyo's 60,198 fatalities have been attributed to fire. The brunt of these was east of the Sumida River around modern-day Sumida Ward, where approximately 1/6 of the population died. At one site near the present-day Edo Tokyo Museum, a cyclone of flame engulfed several thousand evacuees gathered at an abandoned riverside military supply depot.

Medical infrastructure was also heavily impacted by the loss of two thousand hospital beds and the main Japan Red Cross (JRC) warehouse. However, within one week, telegraphic communications were used to contact regional offices within the country, and in the Korean and Manchurian colonies.

In addition, the US Ambassador requested aid from military units in the Philippines. Supplies and personnel soon arrived for temporary facilities; around fifty JRC centers were eventually established and continued operation into the following spring.

This presentation outlines the early post-disaster medical and public health responses and explains how they have been evaluated over time. For example, while motorized ambulances represent innovations, dependency on foreign intervention has been criticized from a security standpoint. Meticulous data management practices of the JRC, municipal government, and the Metropolitan Police Department were also a feature and resulted in published detailed reports of the responses.

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A Rare Cause of Pericarditis: Oesophageal Perforation Due to an Ingested Fishbone

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Summary: Pericarditis is a relatively uncommon condition in emergency settings but is frequently encountered in cardiology. Viral infections are the most common cause, though it can also result from autoimmune conditions, cancer, and, in this case, trauma.

A 70-year-old male patient attended the emergency department with sudden-onset, sharp, pleuritic, central chest pain. The patient reported having a fishbone stuck in his throat earlier in the day, which he had swallowed with food boluses and was pain-free after. Assessment revealed signs consistent with pericarditis, with diffuse ST segment elevation on electrocardiogram. Blood tests showed elevated inflammatory markers and negative Troponin T. A diagnosis of acute pericarditis was made, and the patient was admitted to cardiology for workup and treatment.

A computed tomography (CT) scan of the thorax, abdomen, and pelvis was performed, given his persistent pain despite analgesia. It showed a foreign body at the mid-lower thoracic oesophagus, perforating through the anterior and posterior walls with surrounding inflammatory changes, with moderate low-density pericardial effusion with features of pericarditis. Emergency esophagogastroscopy was arranged, together with repair of the perforations with surgical clips by General Surgery. The patient recovered uneventfully and was discharged after one week. An interval CT Thorax was done in the outpatient setting six weeks post-discharge, showed no mediastinal collection or pneumomediastinum, and an interval decrease in size of the pericardial effusion.

While viral infections remain the top cause of pericarditis, this case highlights the importance of maintaining a broad differential diagnosis of etiologies when diagnosing pericarditis. This necessitates thorough history taking and a low threshold for CT imaging, especially in older patients without preceding respiratory symptoms, immunosuppression, or known autoimmune conditions, to uncover atypical causes. Early identification and intervention are crucial to prevent complications and ensure favorable patient outcomes.

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Development of a Community Paramedicine Model to Support Care of Suspect Special Pathogen Cases

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Summary: The Denver Health Paramedic Division (DHPD) is the primary 911 emergency medical transportation service in Denver, Colorado. It supports emergency and non-emergency medical response at critical gathering sites, such as Denver International Airport and event venues around the city. Additionally, DHPD runs numerous community-focused special operations, including the High-Risk Infection Transport Team (HITTeam), which focuses on responding to special pathogen events. The HIT Team is closely integrated with hospital partners as part of the Region 8 Emerging Special Pathogen Treatment Center.

DHPD is committed to continuous improvement and exploring ways to improve care and comfort for patients. In 2022, the HITTeam began work on the virtual assessment model (VAM) as an innovative and novel approach to treating low-risk suspect cases in the community. In 2024, DHPD paramedics took this a step further by studying to become endorsed community paramedics (P-CP), enabling them to perform expanded medical interventions in community-integrated healthcare service settings. The HIT Team is leading efforts to attain P-CP endorsements to enhance the quality of special pathogen care delivered by the Division and re-focus response on the community in what is traditionally a hospital-centric subspecialty. Alongside hospital and public health partners, HITTeam P-CPs will incorporate special pathogen case assessment, monitoring, specimen collection, patient and family teaching, and pharmaceutical intervention into a mobile framework, thus reducing reliance on hospital-based resources and response structures for low-risk suspect cases.

DHPD's collaboration with other public safety and emergency preparedness entities highlights the Division's commitment to providing high-quality medical and support services to meet community needs. Obtaining P-CP endorsement for members of the HITTeam is another step towards establishing DHPD as an integral part of the social fabric of Denver. It could have far-reaching consequences when it comes to centering paramedicine on the patients and community members who utilize DHPD services.

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Association Between Mortality and Phone-Line Waiting Time for Non-Urgent Medical Care in Denmark

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Introduction: This study investigates whether waiting times for a medical helpline are associated with mortality rates at 1 and 30 days.

Methods: Using data from 2014 to 2018 from the Capital Region of Denmark's medical helpline, researchers conducted a registry-based cohort analysis. This helpline offers hospital referrals, ambulance dispatch, or self-care advice. Calls were grouped by waiting times: <30 seconds, 0:30–2:59, 3–9:59, and ≥10 minutes, aligned with regional service targets. Logistic regression was used to determine the relationship between waiting times and mortality, controlling for age and sex.

Results: The study included 1,244,252 callers who made a total of 3,956,243 calls. Notably, 78% of calls were answered within 10 minutes. Overall, 30-day mortality across all callers was 1% (16,560 deaths). Findings revealed that longer waiting times correlated with higher mortality rates, particularly within the first minute. Among women aged 85–110, 30-day mortality was 9.6% for calls answered in under 30 seconds, rising to 10.8% between 30 seconds and 1 minute, and then slightly dropping to 9.1% for 1–2 minutes. Men in this age group showed similar trends, with mortality increasing from 11.1% (under 30 seconds) to 12.9% (30 seconds to 1 minute). For individuals with high comorbidity (Charlson score ≥2), longer waiting times were similarly linked to higher mortality. Ambulance dispatch rates also declined as waiting times increased, from 4% of calls answered in under 30 seconds to 2% for calls waiting over 10 minutes.

Conclusion: The study concludes that longer helpline waiting times are linked with increased mortality, especially within the first minute for elderly and high-comorbidity callers. This suggests the importance of minimizing waiting times to improve health outcomes.

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The Role of Acupuncture, Moxibustion, and Massage in Disaster Relief in Japan

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Summary: While there have been reports of support by various medical professionals in disaster relief, there have been few reports of support by acupuncture. In particular, there are few reports in English on the continued support provided by acupuncture, moxibustion, and massage in disaster-prone Japan, the fact that support is not limited to evacuees but also includes support workers, and the fact that whole-body treatment is being provided safely.

This paper reports on the support activities of an organization that has dispatched acupuncture, moxibustion, and massage therapists to six major disasters since the Great East Japan Earthquake in 2011 to provide disaster relief.

Since the Great East Japan Earthquake in 2011, the Disaster Acupuncture, Moxibustion and Massage Relief Project has dispatched acupuncture, moxibustion, and massage therapists in 6 major disasters in 2011. The number of people the project have dispatched includes 190 to six cities and towns in the 2011 Great East Japan Earthquake, 17 to one city in the 2015 flood, 21 to two villages in the 2016 earthquake, 34 to one city in the 2018 flood, 41 to two cities and towns in the 2019 flood, and 54 to three cities and towns in the 2014 earthquake. Support was provided not only to evacuees in shelters but also to supporters who were themselves victims of the disaster, including local police and fire department personnel, administrative staff, and medical personnel.

For example, the water restoration may have been accelerated by removing the fatigue and physical pain of water department employees who were working without sleep in areas where water had been cut off. The treatment was provided in a private environment using tents. Treatment was often given to the whole body, including the limbs, abdomen, and back. Symptoms addressed included pain and fatigue as well as mental health issues.

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Creative Resilience: The Role of the Arts and Creative Arts Therapies in Disaster Preparedness, Response and Recovery

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Summary: The arts offer opportunities to express grief, share experiences, and rebuild cultural identity, particularly when these are disrupted by natural disasters or crises. The participatory nature of the arts fosters collective problem solving and strengthens social cohesion, which can support community preparedness and resilience. Moreover, the arts can promote awareness of disaster risks and preparedness strategies through engaging and culturally relevant mediums.

Creative arts therapies offer evidence-informed interventions that support emotional recovery, post-traumatic growth, and psychological resilience. They have been integrated into emergency response frameworks to address mental health and psychosocial support for communities. The sensory and embodied nature of the arts can reduce stress, mitigate symptoms of post-traumatic stress, and enhance coping mechanisms, enabling individuals to process traumatic experiences in ways that verbal communication alone may not.

One program integrating the arts and creative arts therapies into disaster recovery efforts is Creative Forces®: NEA Military Healing Arts Network, which has begun to translate its work with military-connected trauma to support for veterans and communities impacted by natural disasters and other emergencies. Following a literature review, needs assessments, and field scans, Creative Forces sent a creative arts therapist to work with the Administration for Strategic Preparedness and Response (ASPR) and the Hawaii Medical Response and Recovery Team after the Maui Wildfires. This work set the foundation for a multi-year pilot project that is exploring how the arts and creative arts therapies can integrate with emergency response teams and local communities in disaster efforts.

Integrating arts-based approaches into disaster management practice policy can enhance the effectiveness of preparedness, response, and recovery efforts. Future efforts should include building trusted networks and resource hubs between community

arts organizations, cultural leaders, and emergency response sectors to support integrating arts-based services into disaster efforts.

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Demonstrating Telemedicine in Surgical Care with a Mobile Treatment Unit and 5G

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Summary: The mobile Smart Cyber Operating Theater (SCOT), an advanced medical vehicle developed collaboratively by Tokyo Women's Medical University and NTT Docomo, has been designed to deliver crucial medical treatment and support under normal as well as disaster situations. This cutting-edge system leverages 5G technology and a cloud-based framework to facilitate real-time sharing of critical medical information, including surgical images and data on patients' vitals, with surgeons in remote locations. The application of this innovation has greatly improved the decision-making speed and efficacy during medical interventions. In disaster scenarios, demonstration experiments of telemedicine in surgical care were conducted using simulated patients with femur fractures, mandibular fractures, and colonic injuries. Using a robust 5G network alongside a multi-access cloud system, the experiment enabled the seamless sharing of surgical footage and physiological data with remote medical teams, enabling quick clinical decisions. The experiments highlighted the system's capacity to enable uninterrupted collaboration among medical personnel and provide specialized telemedicine in surgical care. The system addresses three critical challenges in disaster medical care: preventing communication disruptions, ensuring real-time responsiveness, and avoiding loss of medical information. Collectively, the system's features markedly bolster rapid medical responses and enhance its potential to deliver swift and efficient medical interventions during normal as well as disaster situations. By integrating advanced software and hardware technologies, the system supports the provision of comprehensive medical care in disaster-stricken areas. This is particularly vital in locations where traditional medical infrastructure is compromised. The deployment of the mobile SCOT in disaster situations is expected to improve the outcomes and prognosis of disaster victims, marking a substantial advancement in emergency medical services and highlighting the importance of technological integration in health care.

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Simplified Management and Resource Triage for Mass Casualty Events (SMART-MCE): A Novel Approach to Emergency Department Mass Casualty Triage

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Summary: Triage systems such as SALT, SMART, and START were developed for prehospital providers to be able to provide consistent and logical sorting when facing a mass casualty event (MCE). In the field, the most important and resource-limited decision is to determine the priority of transport. By contrast, in a hospital, there is potential for overwhelm of other resources, such as available proceduralists and operating rooms. As such, these protocols are less useful when implemented as secondary triage for patients after transfer from the site of the incident.

Simplified Management and Resource Triage for Mass Casualty Events (SMART-MCE) is a novel method designed for secondary, in-hospital triage, specifically addressing the intricacies of critical resource management in the emergency department.

Description: A triage officer is appointed by the incident commander, with preference for a senior emergency physician. Upon arrival, patients are sorted based on immediate resource needs to address the pathology of circulation (C), airway (A), or breathing (B). Patients who have a problem with C or A+B are triaged to the highest resourced area, zone one. Patients with a single problem with A or B are triaged to the critical area, zone two. Patients with no immediate problems with C, A, or B are triaged to the delayed area, zone three.

SMART-MCE was developed at the Samson Assuta Ashdod University Hospital (AA), a 300-bed regional trauma center in Ashdod, Israel, and implemented for the first time during the October 7th massacre in southern Israel. It performed well for maximal resource utilization in an efficient and consistent manner: eighty-five trauma patients were transported to AA, with zero casualties during the initial treatment phase in the emergency department. Based on these preliminary findings, this method warrants further study to establish its usefulness in other hospitals in Israel and internationally.

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Novel Device for Scavenging and Diagnosis of Respiratory Infections

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Introduction: Bioaerosols significantly contribute to infection transmission. Nebulization increases the degree of fugitive aerosols and is limited in use during the COVID-19 pandemic. However, nebulized medications may be an important part of treatment. A novel scavenger device was developed and attaches to a simple face mask.

Allowing for nebulized medication delivery, it additionally scavenges fugitive aerosol, which can be used for diagnostic evaluation. Preliminary scavenger data for nebulized DNA and the diagnostic yield with an inline filter system are presented.

Methods: The novel scavenger device was 3D printed and attached to a simple face mask. The vacuum port of the scavenger device was attached to wall suction with an inline flow meter. The face mask with attached device was then secured to a manikin. DNA-coated 1 micrometer spheres were nebulized from the manikin's mouth for 15 minutes at a nebulized rate of 6L/min. Sampling sites included left and right air sampling at 50 L/min, the interior face mask surface, and an inline

filter to capture scavenged DNA. Standard cycle threshold detection curves were obtained for each DNA oligo used.
Results: Sampling comparing 'off-vacuum' nebulization to 'on vacuum' nebulization demonstrated no significant environmental contamination identified during 'on vacuum' nebulization by the airborne samplers. Preliminary data for cycle threshold values found an average log reduction of 2.75 in total copies of nebulized DNA. More than 99% of the nebulized DNA was scavenged with suction on compared to 45% with suction off. Similarly, during 'on vacuum', DNA diagnostic yield collected on the filter paper had an average log DNA copy of 3.834396.
Conclusion: Preliminary data indicate this device, in combination with commonly available transport and hospital equipment, was successful in preventing environmental contamination when nebulizing solutions coated with DNA. It also demonstrated the ability to scavenge enough DNA for diagnostic purposes. Future studies will include medication administration effectiveness and other diagnostic sampling mechanisms.

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From Reaction to Prevention: Advancing Disaster Medicine with Planetary Health-Informed Risk Reduction

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Summary: The increasing frequency and intensity of disasters demand a shift in disaster medicine from reactive response to proactive prevention. As we start to think beyond the Sendai Framework for Disaster Risk Reduction, the principles of Planetary Health offer an opportunity to expand the role of disaster emergency medicine. This submission highlights the work of the Johns Hopkins Institute for Planetary Health in integrating environmental sustainability and resilience into disaster medicine through innovative, preventative strategies.

Key initiatives at the Institute include embedding biodiversity conservation into disaster planning and incorporating nature-based solutions to mitigate risks and protect vulnerable populations. Additionally, the Institute's recovery strategies emphasize rebuilding in ways that align with environmental sustainability and long-term resilience.

These initiatives underscore the role of Planetary Health in addressing the root causes of disaster vulnerability, such as unsustainable development and environmental degradation. This approach not only enhances the capacity of disaster medicine programs but also aligns them with global sustainability and equity goals.

This case study from the Johns Hopkins Institute for Planetary Health provides a replicable model for other institutions seeking to strengthen their disaster medicine programs through transdisciplinary synergy. By shifting the focus from reaction to prevention and integrating environmental determinants of health, disaster medicine can become a leading force in building resilient, sustainable systems that safeguard communities against future crises.

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