

Integrating Disaster Medicine into Emergency Department Protocols

© Rohit Kumar Varshney

Department of Emergency Medicine, Kalyan Singh Government Medical College, Bulandshahr, Uttar Pradesh, India

Keywords: Disaster medicine, emergency department, surge capacity planning

The increasing frequency and intensity of natural disasters, pandemics, and mass casualty events have highlighted the urgent need for robust disaster preparedness in emergency departments (EDs). Because EDs are at the forefront of disaster response, integrated disaster medicine practices are essential. By minimizing casualties and maximizing care, these protocols guarantee a streamlined, efficient and successful response to the unexpected rush of patients during disasters.

In this editorial, we focus on integrating disaster medicine into ED protocols and highlight strategies for preparedness, staff training, resource allocation, communication, and patient care during disasters.

Disaster medicine includes mass casualty medical management and the planning and deployment of medical personnel during natural, technical, or man-made disasters. This approach is distinct from standard emergency medicine in that it requires an emphasis on the scope, synchronization, and prompt use of resources when managing excessive patient numbers in limited spaces.

The scope of disaster medicine includes (1):

1. Triage and treatment of casualties
2. Resource management (staff, facilities, equipment)
3. Coordination with external agencies [electromyostimulation (EMS), public health, military]

4. Public health considerations, including disease outbreak prevention

5. Ethical decision-making in resource-limited situations

To prepare for any type of disaster, EDs must adopt an “all-hazards approach” to disaster medicine (2). This means that protocols should be designed to be adaptable, regardless of the specific nature of the disaster, whether it be a pandemic, chemical spill, earthquake, or terrorist attack.

The Key Elements of the “All-hazards Approach” Are (3):

1. Hazard Identification and Risk Assessment: ED protocols should begin with a thorough assessment of the types of disasters most likely to affect the region. This includes natural disasters (e.g., earthquakes, floods), technological accidents (e.g., industrial spills), and intentional disasters (e.g., terrorism).

2. Flexible and Scalable Protocols: Disaster protocols should be created with flexible solutions to handle different patient numbers and medical demands, and they should be scalable based on the severity of the disaster.

Disaster medicine integration within ED protocols should cover the following key areas:

Disaster Triage and Patient Flow Management

During a disaster, EDs can be quickly crowded with an influx of patients. Disaster triage systems, such as simple triage and rapid treatment prioritize patients based on the severity of their injuries



Corresponding Author: Rohit Kumar Varshney MD, Department of Emergency Medicine, Kalyan Singh Government Medical College, Bulandshahr, Uttar Pradesh, India
Phone: +919897490444 **E-mail:** rohitmaxy@gmail.com **ORCID ID:** orcid.org/0000-0001-5664-9958

Cite this article as: Varshney RK. Integrating Disaster Medicine into Emergency Department Protocols. Eurasian J Emerg Med. 2024;23(3): 152-4.



©Copyright 2024 The Emergency Physicians Association of Turkey / Eurasian Journal of Emergency Medicine published by Galenos Publishing House.
Licenced by Creative Commons Attribution-NonCommercial-NoDerivatives (CC BY-NC-ND) 4.0 International License.

Received: 23.09.2024
Accepted: 24.09.2024

and likelihood of survival (4). The protocol should define precise triaging of patients that adjust to mass casualty situations. Specific areas for triage and patient flow should be designated that include overflow areas within or outside the hospital to manage patient surges. Moreover, to minimize ED congestion, alternative care locations like mobile units or repurposed spaces, should be provided.

Surge Capacity Planning

One of the primary concerns during disasters is surge capacity—the ability to handle an influx of patients far beyond the usual patient load (5). Disaster protocols should ensure bed surge capacity by identifying areas for patient expansion, such as hallways, waiting rooms, and non-clinical spaces. Staff surge capacity, which involves the cross-training of hospital staff to provide emergency care in crises. In addition, resource surge capacity includes medical supplies (oxygen, medications) and equipment (ventilators, stretchers), with an emphasis on rationing critical resources during prolonged disasters.

Communication Systems and Coordination

Smooth communication both within the hospital and with outside organizations (EMS, public health, military) is essential for an efficient disaster response. Protocols should use redundant communication systems (e.g., radio, satellite phones) to maintain contact with field teams and command centers. An incident command system is to be assigned to coordinate emergency response within the hospital and ensure proper alignment with city, state, and federal disaster plans. Furthermore, regular updates to ED staff regarding the disaster status and ongoing patient flow are to be ensured.

Staff Training and Simulation Drills

The integration of disaster medicine requires continuous staff education and training. Interdisciplinary simulation drills that mimic different disaster scenarios help ensure that staff are familiar with disaster protocols and can execute them under pressure. Triage, mass casualty treatment, patient transport, and coordination with external agencies should all be part of these simulations.

Resource Allocation and Supply Chain Management

During disasters, supplies such as medications, personal protective equipment (PPE), and ventilators may be limited. Therefore, EDs must develop a disaster stock of critical resources to ensure they are readily available during emergencies. Memoranda of understanding with local suppliers and other hospitals to share resources during shortages need to be established. Furthermore, a resource rationing plan to manage the fair allocation of limited resources when demand exceeds supply is to be established.

Mental Health Care During Disasters

Both patients and healthcare professionals may experience severe psychological stress as a result of disasters (6). ED disaster protocols must incorporate mental health care and provide psychological first aid and crisis counseling to survivors and their families. Mental health support for healthcare workers who are likely to experience burnout, post-traumatic stress disorder, or emotional trauma after prolonged exposure to disaster scenarios must be ensured. Finally, to assist personnel in processing their experiences both during and after the disaster, a strategy for peer support programs within the ED should be put into action.

Decontamination and Infection Control Protocols

Certain disasters, such as chemical spills and infectious disease outbreaks, require special handling of patients and the environment. The protocols should establish a decontamination unit within or near the ED for handling patients exposed to hazardous materials. Stringent infection control protocols, including isolation areas for patients with contagious diseases and PPE guidelines for staff, are to be developed.

Post-disaster recovery plans are essential for the ongoing well-being of patients and staff (7). The integration of disaster medicine does not end when the immediate crisis is over. ED protocols should include debriefing sessions for staff members to discuss what went well and what needs to be done to improve. The effectiveness of disaster protocols and identification of gaps for future improvement must be evaluated. Continuous patient care during follow-up is required after the initial disaster response.

Conclusion

In conclusion, integrating disaster medicine into ED protocols is not an option but a necessity in today's environment of frequent and unpredictable disasters. EDs must be equipped with flexible, scalable protocols that ensure rapid and coordinated responses. By focusing on preparedness, training, surge capacity, communication, and collaboration, EDs can be better prepared to manage disasters and provide life-saving care in the most challenging conditions.

References

1. Kocak H, Kinik K, Caliskan C, Aciksari K. The Science of Disaster Medicine: From Response to Risk Reduction. *Medeni Med J.* 2021;36:333-42.
2. Bayntun C, Rockenschaub G, Murray V. Developing a health system approach to disaster management: A qualitative analysis of the core literature to complement the WHO Toolkit for assessing health-system capacity for crisis management. *PLoS Curr.* 2012;4:e5028b6037259a.

3. Bullock JA, Haddow GD, Coppola DP. Mitigation, Prevention, and Preparedness. *Introduction to Homeland Security*. 2013:435-94.
4. Bazyar J, Farrokhi M, Khankeh H. Triage Systems in Mass Casualty Incidents and Disasters: A Review Study with A Worldwide Approach. *Open Access Maced J Med Sci*. 2019;7:482-94.
5. Hasan MK, Nasrullah SM, Quattrocchi A, Arcos González P, Castro Delgado R. Hospital Surge Capacity Preparedness in Disasters and Emergencies: Protocol for a Systematic Review. *Int J Environ Res Public Health*. 2022;19:13437.
6. Makwana N. Disaster and its impact on mental health: A narrative review. *J Family Med Prim Care*. 2019;31;8:3090-95.
7. Khirekar J, Badge A, Bandre GR, Shahu S. Disaster Preparedness in Hospitals. *Cureus*. 2023;15:e50073.