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The Importance of Healthcare Sector Preparedness against Terrorist Incidents with Chemical Weapons of Mass Destruction: Recommendations

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Introduction

In the present era, threats of terrorism involving chemical weapons have emerged as a critical security (1) and public health issue (2). Healthcare services proved vital to protecting lives and handling disasters following the 1995 Tokyo subway sarin gas attack (3, 4). The healthcare sector of multiple countries, including developing nations, continues to battle essential preparedness issues. The preparedness of this sector remains an ongoing issue for many developing and non-developing countries.

The need to prepare the health system

The medical industry maintains an essential position during responses to chemical attack incidents (5-7). The essential elements determining outcomes when managing emergencies and disasters include proper training, sufficient equipment, an early warning system, and effective coordination (8-11). Medical staff and patient safety are damaged when healthcare facilities do not prepare adequately for chemical attacks, which decreases their ability to provide treatment (8, 12, 13).

Current challenges

Current health system preparedness for chemical attacks faces a critical limitation due to inadequate specific training for emergency responders, together with hospital personnel (9). Many healthcare workers lack adequate knowledge of chemical agents, safe exposure practices, and related treatment protocols (2, 9). Limited knowledge about dealing with toxic materials leads to delayed interventions, which results in higher casualty numbers while putting medical staff at risk. Insufficient medical equipment, including protective gear, rapid testing devices, and detoxification systems, limits a treatment center's capacity to handle chemical incidents properly (2, 12, 14). Equipping selected treatment centers with standard facilities to address exposure to chemical agents is a priority for the health system.

Additionally, the insufficient interagency planning combined with missing coordinated protocols results in operational discoordination and confusion when response protocols must be executed (15-17). Enhanced preparedness emerges

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from relevant agencies such as emergency services collaborating with hospitals, fire departments, and security agencies through joint operational scenario practices (18, 19). On the other hand, the lack of a system for assessing and recording the preparedness of treatment centers means that existing weaknesses in infrastructures and processes are not identified and corrected promptly. A nationwide monitoring and ranking system for hospital and healthcare centers' chemical threat preparedness is a practical approach to maintaining continuous improvement.

Key recommendations

The effective management of challenges linked to chemical incidents requires detailed plans established on national and local scales. Healthcare staff must join continuous learning opportunities, combining actual exercises with simulation-based scenarios. Furthermore, personal protective equipment must be supplied to selected centers. A database of hazardous chemicals and their treatment protocols should be created and accessible to healthcare staff. The health system can deal effectively with one of this century's most challenging biological and chemical threats using established evidence-based methods.

Conclusion

The health system is a key pillar of national security against chemical terrorist threats. To prevent human and societal catastrophes caused by such incidents, an active, anticipatory, and evidence-based approach is essential. Effective collaboration among healthcare, security, and relief agencies can make this crucial matter possible.

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Code of ethics

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Authors' contributions

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Keywords

Preparedness, Terrorist incidents, Chemical weapons of mass destruction.

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