

Hospital Preparedness for Chemical and Radiological Disasters



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KEYWORDS

• Hospital preparedness • Chemical injuries • Radiological injuries

KEY POINTS

- Disaster planning can be broken into 4 phases: mitigation, preparation, response, and recovery.
- Although some other types of disasters like hurricanes and tornadoes may be more frequent, chemical and radiological emergencies have the potential for major disruptions to clinical care, owing to their rarity and to their psychological impact on victims and emergency responders.
- Hospitals should prepare and train a decontamination team and set up a decontamination area complete with a shower with a separate ventilation system.
- Every hospital needs to have a variety of antidotes for toxicants in-house and should incorporate a strategy for urgent acquisition of antidotes from other sources, such as nearby hospitals and regional wholesalers. The role and abilities of the Strategic National Stockpile should be carefully evaluated before blithely delegating responsibility to the Strategic National Stockpile in their response plans.

OVERVIEW

The past 2 decades have seen a transformation of our health care system from one in which only 6% of hospitals in a survey¹ reported readiness to receive patients from a sarin exposure to one in which 99% of responders stated a readiness for both chemical and radiological event casualties.² Yet, for all of the focus on systemic preparation for these events, there is still widespread discomfort by individuals within the health care system to address the events. Indeed, there has been little correlation with the development of disaster plans and the competency levels of those entrusted to carry out the plans.^{3,4} This article seeks to address some of these concerns. In the course of

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this article, the authors discuss disaster planning in general, with a focus on conducting a hazard-vulnerability analysis for chemical and radiological dangers. The authors article discusses what medications to stockpile for treatment of the most common chemical and radiological exposures. Finally, the authors discuss how to set up appropriate triage and treatment, focusing on establishing an effective decontamination team.

HOSPITAL PREPAREDNESS

The concept of hospital disaster preparedness in the United States extends back to Cold War preparations for nuclear casualties in the 1950s. Under the Federal Civil Defense Administration, a massive disaster response capacity was created, encompassing specialized training through medical schools, rapidly deployable hospital beds, and civilian defense shelters.⁵ The system was largely dismantled in the 1970s, only to see reconstitution in various forms in following decades. The modern era of domestic preparedness began in 1986, with the Emergency Planning and Community Right-to-Know Act. It continued with the authorization of the Nunn-Lugar-Domenici National Preparedness Act, in response to the Tokyo sarin attack of 1995. Disaster planning remains a priority, albeit a small one, across many governments today.

THE DISASTER CYCLE

The first decade of the twenty-first century saw the loss of thousands of American lives to the twin horrors of terrorism and natural disaster, such as the attack on the World Trade Center in 2001 and hurricanes Katrina and Rita in 2005. In response, local, state, and federal governments once again invested heavily in the creation of disaster-ready communities. Although every disaster has its own unique characteristics, general planning for disasters can be broken down into discreet phases. These phases are mitigation, preparation, response, and recovery.⁶ Although there are several aspects of preparation for chemical and radiological incidents that are unique to those events, a hospital must have a robust ability to respond to disasters in general before any expertise can be reached in these topics.

MITIGATION

The mitigation phase of disaster planning highlights those steps that can be taken to either prevent or, secondarily, minimize the effects of a disaster. This phase is frequently manifested in anticipatory means, such as preparing a building for an earthquake by installing bracing hardware or structural supports. Mitigation can also take less tangible forms, such as gathering intelligence on local hazards or establishing regulations to bring all health care entities within a given geographic area into a unified planning and response framework.

United States National Regulatory Requirements

The Joint Commission mandates that every hospital have a designated emergency manager, and an all-hazards emergency response plan.⁷ Plans must address several key areas (communications, resources and assets, security and safety, staff, utilities, patients, and volunteers). The Joint Commission recommends that hospitals create specific management plans for chemical and radiological emergencies and that a specific contact person with expertise in these areas be designated.

In addition, plans must comply with the Federally sanctioned National Incident Management System (NIMS) created to allow for successful interface between

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