Hospital Decontamination

What Nurses Need to Know

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KEYWORDS

• Hospital decontamination • Hazardous materials • Contamination
• Victim decontamination • Medical decontamination • Chemical removal

KEY POINTS

- Hospital decontamination is the removal of contaminants from a victim on arrival at the hospital.
- First receivers are caregivers or emergency personnel receiving patients for care.
- First responders are emergency personnel or caregivers going to the disaster scene or emergency area.

According to the Hazmat Intelligence Portal,[1] there were more than 15,778 hazardous material incidents with 11 deaths and 142 injuries reported by the US Department of Transportation, Pipeline and Hazardous Material Safety Administration, and the Office of Hazardous Material Safety during 2015. No mandate to track and/or report hospital decontamination responses exists; therefore, the likelihood of a greater number of hazardous material events occurring but not being reported is great. Decontamination procedures for mass casualty exposure events have traditionally focused on response at the scene versus hospital decontamination procedures and capabilities.[2] A medical center's ability to decontaminate and treat a mass influx of contaminated patients is a time-consuming and resource-exhausting task.

Times of disaster prove to be challenging for medical providers because they are looked on, by many, as the foundation of community response and recovery. Health care personnel are expected to be prepared and capable of handling any and all medical issues no matter how complex the scenario. The potential for chemical, biological, and nuclear weapons being used against the United States has steadily increased since the attacks of 9/11 and present the country with a profound threat. Although limited, research on hospital decontamination suggests concerns with hospital capabilities to adequately and safely conduct patient decontamination during incidents

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involving chemical contaminants. This article is grounded in a comprehensive literature review as well as the author's conduct of preparedness gap analysis for more than 45 hospitals and his research on hospital decontamination. The current state of medical decontamination capabilities, including a comprehensive review of literature, is elucidated and progresses to a discussion of first receiver implications for contaminated patients. In addition, suggested best practices, grounded in the evidence, are presented.

CURRENT STATE OF MEDICAL DECONTAMINATION

Current literature regarding patient care at hazardous substance incidents primarily focuses on responders who are first on the scene of the incident rather than health care professionals who provide care for the victims at hospitals. Literature available on the subject of decontamination is scarce and primarily comes from after-action reviews, agency protocols, and government standards. Most decontamination-related research and literature is derived from the first responder perspective versus that of the first receiver. Although existing literature seems to be outdated, recent evaluations of hospital preparedness support that the literature is still valid and circumstances have not improved.

Decontamination at the hospital is focused on removing all contaminants that could potentially cause secondary contamination to unprotected health care providers treating victims, current patients, and visitors.[2,3] Even after decontamination at the scene, contaminants may remain on patients' clothing or their persons.[2] When these patients then present to the hospital, medical personnel tending to them are at great risk for secondary contamination.[4] Any and all victims of an incident involving hazardous materials should be considered contaminated until health care professionals ensure that contaminants have been completely removed, regardless of on-site decontamination measures.[5] Providers should expect to receive a large number of contaminated victims, many of whom will make their way to the hospital on their own.[4–6] It is expected that up to 80% of victims in a mass casualty incident, involving contaminants or otherwise, will self-report to a medical facility.[7] In cases in which victims self-transport, hospital personnel are required to act quickly and often have little to no notice.[8]

Hospital personnel have the perception that assistance from local first responders, such as the fire department or specialized hazardous materials teams, will provide assistance with decontamination procedures and contaminant identification. This perception is a recipe for disaster. Niska[9] showed that more than 58% of medical centers intended to contact a hazardous material team for assistance during hazardous material events; however, only 44% of those medical centers conducted any form of training with hazardous material teams. Help at the hospital from responders should not be expected because responders will be deployed to the scene of the incident and not capable of sending manpower and resources elsewhere,[5] especially in rural areas where the number of first responders is limited and often depends on volunteers versus professional responders.

Kenar and Karaynlanoglu[3] suggest that the transfer of contaminated victims directly from the incident site to the hospital for treatment is a serious mistake. They reiterate that patients are generally poorly decontaminated at the scene, which creates a great potential for secondary contamination to health care workers providing direct patient care with limited protection against contaminants. Health care workers must be assured that the patients are clean and safe for direct patient contact.

A critical element of hospital safety is the ability to receive and treat contaminated or assumed contaminated victims.[2,10] Untrained and ill-prepared staff attempting to