Evidence Report

Chapter 1. Introduction

A disaster has been defined as "a natural or manmade force the destructive impact of which overwhelms a community's ability to meet healthcare demands."[1] Recent attacks against the United States have increased awareness of the limits of emergency response capabilities to meet the challenge of disasters.[1] Threats that once seemed merely theoretical have become a disturbing reality. The emergence of foreign state-sponsored terrorism, proliferation of chemical and biological agents, availability of materials and scientific weapons expertise, and recent increases in less discriminate attacks all point toward a growing threat of an unconventional mass casualty incident (MCI). Terrorist attacks, such as the September 11th attacks and the deliberate anthrax contamination of U.S. postal facilities, highlight the critical importance of strengthening hospital disaster preparedness.

Hospitals are taking renewed interest in disaster preparedness by reexamining their disaster plans and conducting disaster drills. Governmental agencies, healthcare professionals, and public health advocates have sought to determine the best ways to mitigate the potential impact of an MCI that may involve natural, biological, chemical, radiation, nuclear, or other agents. Preparing for MCIs is a daunting task, as unique issues must be considered with each type of event. For example, the systemic sustained stress of a biothreat is entirely different from that of a chemical disaster or any other acute-onset incident. Biological events may create large numbers of people requiring both emergency services and sustained medical care. Differences between scenarios hold challenging implications for preparedness training.

Accordingly, hospital disaster preparedness has taken on increased importance at local, state, and federal levels. The Frist-Kennedy "Public Threats and Emergencies Act of 2000" addresses bioterrorism prevention, preparedness, and response, and delineates the strategy for a national biodefense policy.[2] In addition, experts have outlined medical and public health management strategies for biological weapons such as smallpox, plague, and anthrax.[3-5] It is important to retain this focus in the face of competing national priorities related to both medical and non-medical issues.

As observed with the global Severe Acute Respiratory Syndrome (SARS) outbreak, the healthcare delivery system is the center of the response to an MCI. Unfortunately, the role of hospitals in this area has been neglected. Improving hospital capability therefore needs to be a top priority. Disaster preparedness has been impeded by out-of-date hospital practices and the lack of coordination between critical functional units and between the hospital and outside organizations and agencies. Hospitals need to play a key role in developing disaster preparedness plans, and they need to coordinate efforts with public health systems and with appropriate federal, state, and local agencies. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) issued new Environment of Care standards effective January 1, 2001. These standards require hospitals to develop "cooperative planning among health care organizations that, together, provide services to a contiguous geographic area."[6] The standards also require hospitals to test their emergency management plan twice a year, including at least one community-wide practice drill to assess communications, coordination and the effectiveness of command structures.[7] Either actual emergencies or planned drills are acceptable, and they are to be conducted at least four months and no more than eight months apart.

Despite the importance of disaster preparedness, hospitals must consider the investment

required in the face of finite resources. For example, disaster preparedness training is time-consuming and may divert resources away from other activities. Furthermore, academic centers, community hospitals, urban hospitals, and rural facilities may have different training requirements. Some financially strapped hospitals may be reluctant to provide costly disaster preparedness training that does not benefit their financial position. This can be an issue with the JCAHO-required drills, as hospitals may be pressured to meet this requirement through standard training to avoid the costs of either disruption of services or planning and executing expensive drills.

The need to prepare hospitals to respond to MCIs has received increased attention recently. Disaster drills and other exercises have been performed or planned at an increasing number of hospitals. As a part of its new standards, the JCAHO now requires hospitals to conduct two disaster drills per year, although drill activity is not yet weighted heavily in accreditation due to a shortage of funds to support this activity. Since drills have many purposes, it is vital to be clear about the objectives that each drill is intended to address. Given the different objectives and operational elements involved, it may be valuable to use different types of drills. However, it is not known whether drill participation and training for hospital staff to prepare for MCIs is effective.

Purpose of This Evidence Report

In 2000, the Agency for Healthcare Research and Quality (AHRQ) awarded the Johns Hopkins University (JHU) Evidence-based Practice Center (EPC) a task order to develop the evidence report "Training of Clinicians for Public Health Events Relevant to Bioterrorism Preparedness" as part of the Agency's bioterrorism preparedness initiative. The report was requested by AHRQ's Center for Primary Care Research. The AHRQ published the evidence report, in print and on its website, in 2002.[8,9]

The current evidence report updates the previous report, focusing specifically on the effectiveness of hospital disaster drills, computer simulations, and tabletop or other exercises in training hospital staff to respond to an MCI. For the purpose of this report, hospital staff refers to all levels of individuals employed by the hospital, and an MCI is defined as an incident that results in multiple casualties that overwhelm local resources and that may involve natural, biological, chemical, nuclear, or other agents. This report also reviews evidence concerning the methods or tools that have been used to evaluate the effectiveness of these training activities.

By synthesizing the existing evidence on the training of hospital staff to respond to an MCI and by determining strategies most likely to work effectively, this report will provide direction for future training of staff in hospital disaster preparedness. The premise is that a review of published literature will help hospital leaders in their efforts to formulate best practices. Because some training programs for disaster preparedness, including those carried out by the military, may not be published, it would be a daunting task to identify such programs and obtain meaningful evaluations of them. Such an undertaking is beyond the scope of this review of evidence.