

Domestic Preparedness for Events Involving Weapons of Mass Destruction

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Until recently, chemical and biological weapons have not been the focus of domestic planning, unlike our long-standing preparedness for a nuclear attack. Today, however, these weapons of mass destruction (WMDs) are readily available to many countries, including so-called rogue states. Even more alarming, WMDs are a viable alternative to conventional weapons for terrorist groups and disgruntled individuals. This availability, coupled with terrorists' willingness to use these deadly agents, has created a credible and serious threat to the nation's security. The probability of a WMD incident is greater than ever and threatens the United States and other countries with potentially devastating consequences, including widespread death and disease and destruction of societal infrastructure and possibly society itself.^{1,2}

Recent US federal government initiatives have addressed this threat by establishing preparedness programs for local and state personnel.^{1,3} The intent is to enhance domestic preparedness in an attempt to mitigate the consequences of a WMD incident and to deter potential use of these weapons. In this issue of THE JOURNAL, Macintyre et al⁴ discuss some of the major challenges confronting health care professionals responsible for planning an effective health care facility response to a WMD event. While the authors focus on "events that require decontamination of exposed persons," these recognized experts certainly put into perspective many of the problems currently encountered in planning and implementing preparedness programs in the United States.

To date, there has been minimal involvement of health care facilities and health care professionals in WMD preparedness programs. The lack of integration of health care facilities in the overall community response is a serious flaw in US national strategy. Why have health care facilities not been integrated into the program? A main factor is that federal funds have so far been directed to traditional first responders: firefighters and law enforcement. This is an appropriate initial direction because these responders are the first line of defense. However, now is the time to incorporate the entire medical response system.

Because of a lack of funds, hospital administrators have been reluctant to involve their institutions. Administrators are continually confronted with unfunded mandates in a time of fiscal constraints. This particular program is potentially very expensive because it requires specialized equipment and supplies and a large number of personnel being trained to rather sophisticated levels. In addition, the possibility of contaminating the health care facility and suspending or limiting hospital access to community patients because of participation in response to an actual or alleged WMD event is a valid concern for hospital administrators. Federal support and consideration of protection from inappropriate litigation are needed.

The lack of involvement of physicians, nurses, and other health care professionals in current preparedness programs is also an obvious concern. Health care professionals will be essential in any response to a WMD incident, so involving them is mandatory. These professionals, in turn, must understand the need to become active participants in the preparedness arena.

Macintyre and colleagues⁴ correctly point out that another major issue is health care professionals' lack of working knowledge of the incident command system. This is a major flaw that must be addressed quickly, as traditional first responders base their command and control on the incident command system. Fortunately, an incident command system is available for hospitals and should be incorporated rapidly in disaster preparedness plans for health care facilities.⁵

Four other critical challenges to an effective response include a concern that preparedness programs are not comprehensive, the lack of effective surveillance systems to detect the release of WMD agents, the need for training of health care professionals, and the need for central federal coordination of these efforts.

First, current preparedness programs are not comprehensive in their design because the contemporary model that serves as a planning framework for a community response against WMDs is the hazardous materials (HAZMAT) model. This approach is appropriate for situations involving certain toxic or chemical weapons exposures, but it is not totally applicable for all chemical weapons and is generally inapplicable for community defense against biological terrorism. For example, as the authors discuss, decontamination, a critical core element of the HAZMAT model, is currently under scrutiny because decontamination is time and labor intensive and requires tremendous resources. If chemical agents are dispersed widely and thousands of people are exposed, it is impractical to decontaminate every individual involved. Furthermore, decontamination may not be required for as many chemical incidents as it was once thought. If an individual survives the initial chemical exposure, removal to an uncontaminated area or simply sending the person home to take a shower may be all that is necessary for some exposures.⁶

Perhaps the most important flaw is the fact that the HAZMAT model does not address the use of biological weapons in a terrorist attack.^{6, 7} Biological agents are very attractive to terrorists. These agents are relatively inexpensive and do not require sophisticated technologies for production and delivery. Most organisms suitable for biological warfare have an insidious onset and may mimic natural epidemics of influenza.⁸ Biological agents may approximate the lethality of nuclear explosions by resulting in a large number of casualties and producing widespread panic. In the future, the threat will be even greater; advances in technology in genetic engineering may permit any terrorist group access to "designer" biowarfare agents. These issues illustrate the deficits in the current model.

The second critical element missing in current response programs is a surveillance system that can provide warning of an attack.⁹ Unfortunately, existing local, regional, state, and national surveillance systems that detect emerging infectious agents are not adequate to detect potential biowarfare agents. Key to this deficiency has been the lack of funding and support for the public health infrastructure. While there is no "black box" technology available to the civilian community to rapidly and accurately detect and identify a biological or some chemical agents, the development of modern technology supporting epidemiological warning networks at the local, regional, and national level is possible.¹⁰ These systems can provide a first warning of potential terrorist agents and would be useful for many other important public health issues. Sophisticated surveillance systems must be in place and must be integrated with the existing public health infrastructure, including emergency departments. A national electronic network to monitor reports of unusual medical events and medical databases from hospitals and other local sources, including emergency agencies, poison control centers, medical examiner offices, and managed care organizations, will provide real-time valid information critical to early detection and identification.

A third critical and absolutely vital element is the need for specific training for health care personnel. Health care professionals must be able to recognize the signs and symptoms of a chemical or biological attack for the community and nation to respond quickly and successfully. For example, during a chemical HAZMAT incident, police and firefighters, the first responders at the scene of the incident, will initiate response and treatment protocols. However, exposed and contaminated survivors will still present to emergency departments and health care facilities for evaluation and treatment. Health care professionals may be unaware of exposures or uninformed regarding the nature of the exposure. They therefore need to be familiar with the various "toxidromes" caused by chemical warfare agents.

For a biological weapons event, the first responders most likely will be health care professionals, especially emergency physicians and nurses. Unlike HAZMAT incidents, during which the response and initial treatment scene occurs out of the hospital, the scene for an incident involving intentional release of biological agents will be local emergency departments and clinics. Detection, diagnosis, and lifesaving treatment may be delayed if the initial treating physicians and nurses do not have the clinical knowledge and level of suspicion to recognize the features of a biological attack and activate a response.

To have an effective medical response to a terrorist attack, a focused educational effort for health care professionals, especially emergency physicians, nurses, and out-of-hospital emergency medical services (EMS) personnel, is paramount. Only through training and practice will health care professionals develop the expertise and degree of suspicion necessary to initiate an effective response. Unless this training is forthcoming, the United States will miss a critical link in the appropriate management of a WMD incident. To that end, the American College of Emergency Physicians has convened a task force of health care professionals under a grant from the Office of Emergency Preparedness of the Public Health Service to develop an effective and sustainable training strategy for EMS personnel, emergency physicians, and emergency nurses.

The fourth and final element is a central federal coordinating office that is essential to the development of an effective national response to a terrorist attack. As Macintyre et al⁴ note, the system proposed by the Attorney General, the National Domestic Preparedness Office, contains the components pleaded for by state and local representatives from law enforcement, fire services, and emergency managers and health care professionals.¹¹ There are approximately 40 departments and agencies within the federal government involved in domestic preparation. To the local and state provider, the lack of coordination among federal agencies is confusing, ineffective, and inefficient.

No matter what type of incident, the local community, large or small, must respond quickly and appropriately. Moreover, the community in most instances must have the ability to be self-sufficient for at least 24 hours because state and federal resources may not be available during that period. Only through adequate planning will the community response be successful. Centralized coordination of the important initiatives currently under way in many federal departments and agencies will allow local and state officials the opportunity to obtain valuable planning and training information efficiently. In addition, such coordination could allow the federal bureaucracy to be streamlined into a cost-effective office that is able to deliver the needed expert advice, suggested planning strategies, available resources, and important training in a timely fashion.

Although a terrorist attack is a low probability event for any single city or town, experts concur that it is not a matter of if or where, but when. The price of freedom in our country is vulnerability. The United States has recognized the threats of terrorism and has begun to implement deterrent and response strategies. To date, the federal government has used existing fire and emergency services plans as a foundation and focused preparedness programs on conventional first responders, firefighters and police. This strategy is well founded and provides an important base for response strategies but is incomplete. Prior to further federal program development and implementation, there needs to be a reconsideration and modification to the current approach to include health care professionals and health care facilities. Macintyre et al⁴ propose priorities that guide health care professionals in the preparedness process. The heart and soul of medical preparedness, these priorities are protection of staff, patients, and the facility; provision of the best possible medical care for contaminated patients; and environmental protection for the community.

To fulfill these priorities, the nation's approach to domestic preparedness must be broadened. Health care facilities should be integrated into the planning and response efforts for WMD events, similar to other disaster planning. Health care professionals should be empowered by education and involvement, and a sophisticated medical surveillance infrastructure should be established and supported. Finally, Congress must be urged to fully fund and support the National Domestic Preparedness Office to facilitate these endeavors at the local and state level. These strategies will enhance the readiness and capacity of the local, state, and federal health care system to provide the needed services in the event of a terrorist attack.

The issue of domestic preparedness is not just academic debate, as someday soon the United States will face the aftermath of the terrorist use of a WMD. Appropriate planning and preparation guided in part by committed health care professionals can significantly mitigate the consequences of a WMD incident. A lack of involvement leading to an inappropriate medical response undoubtedly will worsen an already tragic event.

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Editorials represent the opinions of the authors and THE JOURNAL and not those of the American Medical Association.

Previous Presentation: Portions of this editorial were presented as testimony to the Government Reform and Oversight Committee, Subcommittee on National Security, September 22, 1999, Washington, DC.

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