National Disaster Medical System

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This discussion focuses on the functions of the Office of Emergency Preparedness (OEP) within the Department of Health and Human Services (DHHS), particularly as they relate to responses to any release of a weapon of mass destruction (WMD). It is important to be aware that an infrastructure is available to address consequences that will be created for the health care delivery system.

Our office, OEP, is responsible for responses to a variety of disasters that could overwhelm local and state health systems with casualties. Examples include natural disasters, transportation disasters, technological disasters, and disasters that may be caused by the use of WMDs by terrorists. A fact that may be surprising to you is that our office, under agreement with the National Transportation Safety Board, also provides the teams for victim identification when we have transportation disasters such as commercial airline crashes. In addition, the OEP provides health care teams in response to a terrorist attack, which could overwhelm local health care systems. We may be called on to respond to technological disasters, if they would cause significant shortfalls in health care capacity.

The Federal Response Plan has made the federal response to disasters very understandable. Essentially, it states that during any presidentially declared disaster in the United States, 12 essential functions might have to be performed to be able to have an effective response in support of state and local governments, ranging from mass care to transportation, urban search and rescue, environmental health services, and health and medical services.

The health and medical services function is called Emergency Support Function #8 (ESF-8), for which DHHS has the lead but is supported by 12 other departments. These departments work with us in providing resources to assist in meeting the challenges that would be faced by our health care system in the event of a significant disaster creating mass casualties. ESF-8 provides four principal types of services: preventive health services, environmental health services, medical services, and mental health services. Two of these services are resource intense: medical services, which might have to be provided to mass casualty victims, and mental health services. These two potentially resource-intense responses are largely accommodated through the National Disaster Medical System (NDMS), which has been in existence for more than 15 years.

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The NDMS is a public-private partnership. At the federal level, it is a partnership of DHHS, Department of Veterans Affairs, Department of Defense, and Federal Emergency Management Agency.

The NDMS was created to address two sources of overwhelming medical care requirements: civilian disasters involving extraordinary community needs and military contingencies, in which we might have a large number of casualties that cannot be accommodated by the Departments of Defense or Veterans Affairs. The individual departments have different functions in this system. DHHS, which has the lead for the system, is responsible for providing primary care at the site of the disaster. The Department of Defense is responsible for patient evacuation, and the Departments of Veterans Affairs and Defense are responsible for providing definitive care, not necessarily through their own facilities but also through nonfederal hospitals that have joined the NDMS.

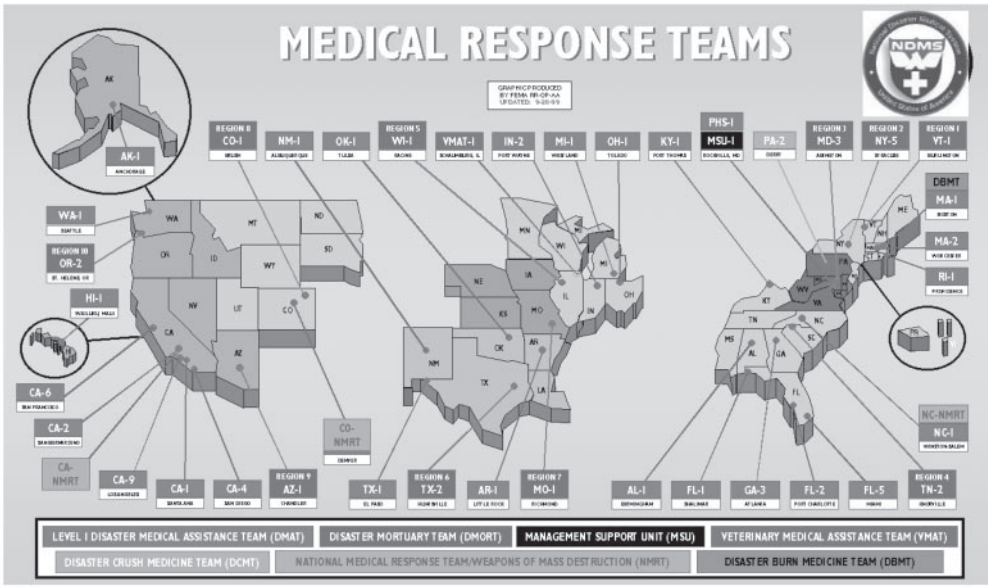

Figure 1.

NDMS Response Teams

- 27 Disaster Medical Assistance Teams (12–24 hour response);
- 8 Disaster Medical Assistance Teams (support);
- 11 Disaster Medical Assistance Teams (staffing resource);
- 4 National Medical Response Teams/WMD;
- 6 Burn Teams;
- 2 Pediatric Teams;
- 1 Crush Medicine Team;
- 1 International Medical/Surgical Team;
- 4 Mental Health Teams;
- 4 Veterinary Medical Assistance Teams;
- 10 Disaster Mortuary Teams;
- 1 Management Support Team.

For medical response, between 7,000 and 8,000 volunteer health professionals around the country have been organized into general and specialty teams that are part of the NDMS. About 35 people from each of these teams constitute the initial response group. Because of the number of teams, we can field a very substantial health care work force in the event of a disaster. These teams are locally organized and sponsored, have members with a wide variety of health care skills, are community based, and are available to the state in which they are located if needed. In the system we have 27 primary care teams that can respond within 12 to 24 hours. Three teams in the West and three in the East are on call at any one time. There are four National Medical Response Teams—located here in Washington, Winston-Salem, Denver, and Los Angeles—that can respond to the unique requirements of a chemical or biological weapons attack. The system's specialized burn teams are essential if, for example, there is a mustard gas attack, producing a high demand for burn care. Disaster mortuary teams are located around the country, which can assist in meeting the extraordinary burden of fatality management in a mass casualty-producing event. These are just a few examples of the types of care offered by NDMS teams and of their broad geographic distribution. In 1999 these teams were deployed in the field for 340 response days, responding to up to four different disasters at the same time (Figure 1).

Under the system, the lead responsibility for definitive medical care rests with the Departments of Defense and Veterans Affairs (Figure 2). Nonfederal hospitals volunteer to participate in the system, specifying the maximum number of beds that they could make available should the need arise. Approximately 2,000 such hospitals around the country offer approximately

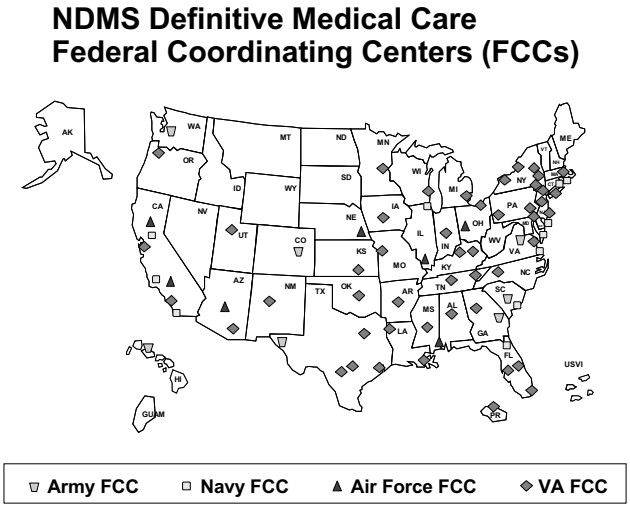

Figure 2.

100,000 beds to the system, including specialty as well as general medical-surgical beds. These resources are coordinated from 64 centers around the country. As a whole, the system makes it possible to treat patients at the scene, provide safe transportation away from the disaster, and hospitalize patients far from the incident.

NDMS Definitive Medical Care
Lead Responsibility: DOD/VA:

- Concentrated in major metropolitan areas;
- Air access;
- Federal coordinating centers;
- Available hospital support;
- Patient reception and distribution capabilities.

During the change of millennium and during the Top Off exercise, it became clear that the capacity of our health care system is less than elastic; consequently, our ability to care for mass casualties will require creative new ideas. Even routine, increased demands posed by the winter influenza season are sorely testing local capacity in some areas. Both the Johns Hopkins Center for Civilian Biodefense Studies and the American Hospital Association have been attempting to address these critical needs to characterize the problem and foster solutions to the need for surge capacity.

During Top Off, it became clear that should any kind of significant biological weapons release occur, the local hospital system would very rapidly become overwhelmed. The increase in local health care demand would be so substantial that it would essentially paralyze the ability of that locality to be able to offer health care services, regardless of level of intensity.

A study by Kaufman and Meltzer projected some of the requirements for the health care delivery system should, for example, an anthrax attack occur. Extrapolating the data from that study, a metropolis of about 500,000 people such as Washington, DC, might have at most 3,000 hospital beds available, a percentage of which might be made available to meet unexpected acute demands. However, there could be as many as 250,000 casualties or people exposed to inhalation anthrax from the atmospheric release of a line source. From that, as many as 150,000 deaths could occur eventually over several weeks if treatment were delayed or unavailable. Just imagine the immediate demand that would be placed on the local health care delivery system. This demand would be so overwhelming that it would paralyze the local and even surrounding health care delivery resources.

Today we are exploring the options for health care systems to enable them to better respond. Part of this work is being done through the Metropolitan Medical Response System (MMRS) planning efforts across the country in the largest metropolitan areas, e.g., core cities and their surrounding counties and jurisdictions. However, there are fundamentally three basic approaches to expand capacity. One is to expand local capacity through the addition of alternate sites for care, normally as an adjunct to an existing hospital so that the normal patterns of providing care can be enhanced rather than replaced. The challenge will be providing a sufficient and capable work force to provide the care required. Likewise, equipment, particularly for respiratory assistance, will need to be provided. A second major alternative is enhanced home care. This alternative must be studied very seriously. Reliance on a home care scenario to assist in meeting

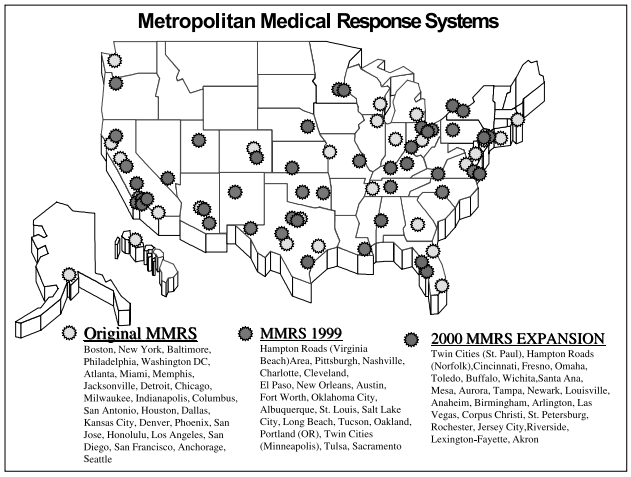

Figure 3.

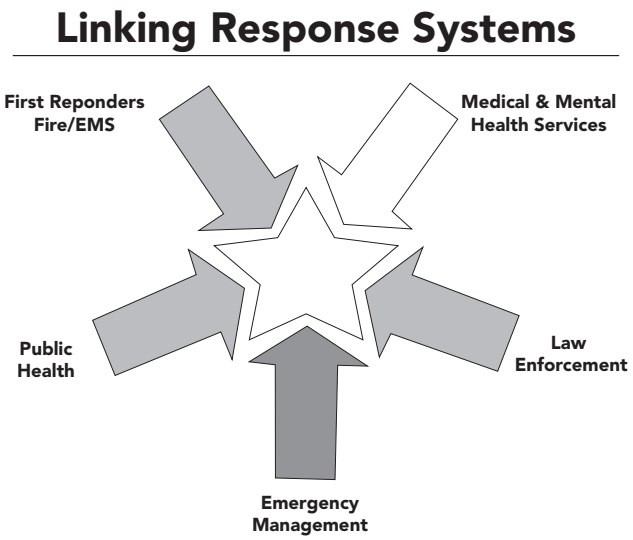

Figure 4.

mass care demands is highly appealing for many reasons. The third alternative is patient evacuation, a solution that works well when there is an isolated disaster and patients can be moved from a place of relative scarcity to a place of plenty. The challenge, again, in all of these instances, is going to be providing adequate numbers of health professionals.

Exercises have done little to uncover these weaknesses in our system. We have concluded all of these national system tests within a couple of days of the release of a WMD. Consequently, we never demonstrate the stresses that are going to be placed on our health care delivery system, overwhelming it and potentially paralyzing it. Part of our strategy to address some of these challenges is the development of MMRS (Figure 3). We have been facilitating MMRS development of local plans to deal with the rapid expansion of health care demand after the release of a chemical or biological weapon and during other mass casualty situations, such as would be created by a pandemic.

Metropolitan Medical Response System

- To enhance local planning and medical response systems' existing capability, specifically tailored to the local area, to care for victims of a terrorist incident involving a weapon of mass destruction.
- Characteristics:
  - —Concept of operations plan;
  - —Specially trained responders and equipment;
  - —Special pharmaceuticals;
  - —Plans for prophylaxis of affected population;
  - —Enhanced emergency medical transport and emergency room capabilities;
  - —Expandable hospital-based care;
  - —Integration with NDMS capabilities;
  - —Mass fatality management;
  - —Mental health strategy.

By this time next year, we are projecting that approximately 100 metropolitan areas will have started to develop their response systems. By the middle of the decade, we hope that there will be 200 areas, home to about 200 million Americans.

What do we expect will happen? We expect that communities will come together at the local level, that parts of the local governance structure that have never worked together before will begin working together now, and that the systems that are ultimately created will enhance response to a wide range of community challenges. The MMRS will bring together first-responders, law enforcement communities, emergency management communities, public health communities, and medical and mental health service communities to work together, planning how a comprehensive response to one of these attacks might be organized and executed and developing approaches to meet the extraordinary health care demands that would be generated should one of these events ever occur (Figure 4).

When we address this challenge effectively, we will have simultaneously strengthened the nation's public health infrastructure as well as our potential effectiveness in a national health care capacity crisis.