

The National Disaster Medical System

Thomas P. Reutershan
Director, Office of Emergency Preparedness
National Disaster Medical System
U.S. Public Health Service

INTRODUCTION / BACKGROUND

Overall our nation is well equipped to provide traditional emergency medical services or "EMS" and the majority of EMS responses in our country are single victim incidents involving serious illness such as heart attacks, or injury resulting from automobile accidents, et cetera. Most of our major metropolitan areas are well prepared to deal with multiple casualties resulting from train wrecks or bus crashes and the like.

The problem is—What do we do when a big one hits? And we've been very fortunate in the United States. We haven't had a big one in over 80 years—not since 1906, the great San Francisco earthquake, have we had a catastrophic disaster with a mass number of casualties.

However, we've been reminded recently, with the earthquake in Soviet Armenia, that such catastrophes do occur. Someday, one will occur here. Not just likely to occur, but it's going to occur, somewhere in the United States.

It's also been a couple of decades since we've been involved in a conventional armed conflict which produced mass numbers of casualties among members of the U.S. Armed Forces. And although the number of military medical facilities in the United States may look very impressive, the bottom line is that all of the facilities add up to only 16,000 beds. Compare that to over a half a million military hospital beds that existed during World War II. Casualty projections for an overseas conventional conflict today with current sophisticated weaponry will far exceed the capacity of the Department of Defense to provide needed care. And even with the primary backup support of the Department of Veterans Affairs (approximately 32,000 additional beds could be provided by the VA), that capacity would also soon be exceeded if we were to engage in an overseas conventional conflict.

There were two issues that needed to be addressed. The major catastrophic domestic disaster, and the possibility of an overseas conventional conflict. In 1981 the President was concerned about both of these issues, concerned enough that he directed a series of initiatives designed to improve national policies and programs to address preparedness. He established the Emergency Mobilization Preparedness Board, chaired by his National Security Advisor, which

was composed of 23 Executive Branch departments. Members of the Board were either deputy or undersecretary level appointees. He also established a series of working groups including a principal working group on health, chaired by the Assistant Secretary for Health in the Department of Health and Human Services. He directed the Board and working groups to develop policies and programs to improve national preparedness for major domestic disasters and national security emergencies. He also directed the Board and working groups to make maximum use of existing resources.

The first product of the Board and working groups was National Security Decision Directive 47 (NSDD-47), which was approved by the President in July, 1982. This document not only set forth general policy, it also provided specific principles for carrying the policy forward.

Following the issuance of NSDD-47, the Board and working groups developed plans for improved national preparedness. Within the health and medical arena, the working group on health developed the concept and system design for the National Disaster Medical System (NDMS). Key steps in the establishment of the NDMS were included in a National Plan of Action on Emergency Mobilization Preparedness, which the President approved in March, 1983. NDMS was created for mastering the challenge to provide care in major catastrophic disasters here at home or for military casualties of a major overseas conventional conflict.

Although the impetus for developing the NDMS resulted from national level concerns, organization and successful operation of the system begins at the local ("grass roots") level. Local institutions, organizations and individuals have come together as part of the NDMS to improve their hometown disaster medical readiness. At the same time, these local NDMS assets are essential components for effective statewide and nationwide medical mutual aid.

NDMS—PURPOSES/KEY COMPONENTS

Thus, the purpose of the NDMS is twofold: to provide supplemental medical assistance to state and local officials in massive domestic disasters, and support the military and VA medical systems in caring for military casualties of a conventional conflict. At the Federal level, NDMS is a partnership and joint venture involving four major departments and agencies: the Department of Defense, the Federal Emergency Management Agency, the Department of Health and Human Services, and the Department of Veterans' Affairs. NDMS has three major components. First, medical response, second, a system of patient evacuation, and third, definitive medical care.

MEDICAL RESPONSE

Medical response consists of Disaster Medical Assistance Teams, or DMATs, plus the medical supplies and equipment necessary for the DMATs to perform their function. The DMAT is a volunteer group composed of about 30 physicians, nurses, technicians and other allied personnel, coming together and training as a volunteer unit. DMATs are, in the first instance, a community resource for supporting local emergency responders units in mass casualty incidents. Second, DMATs are also assets which may be used for medical response within their home state. Third, DMATs are a national resource that can be called on to provide interstate aid. Those DMATs that are capable of deployment to a distant disaster site will arrive in the area with enough supplies and equipment to be self-sufficient for a limited period of time, at least 72 hours. Much of the work at the disaster site will be to provide "triage," which is a French word meaning to sort patients according to their priority needs for care consistent with the medical resources available. In addition, DMATs will provide austere medical care, and those services necessary to casualty clearing and staging. "Clearing" and "staging" are terms borrowed from the military. "Clearing" refers to austere field medical care, and "staging" refers to those medical services required during patient evacuation. DMATs in local NDMS reception areas will provide medical services associated with receiving patients, assessing patients' medical needs and matching those needs with available local hospital capability.

Although the DMATs initially will be organized as non-Federal volunteers, and will train as non-Federal volunteers, upon activation of the system for a national emergency, DMAT members will become temporary employees of the Federal government—the U.S. Public Health Service. There are three reasons for doing this.

When DMAT members are appointed as Federal employees, potential problems of licensure and certification are avoided, particularly where teams are moved across state lines. In our country each state has unique requirements for licensure and certification of medical personnel. An individual may find it difficult to cross state borders and practice his or her profession without having a license in the state to which they travel. But as a Federal employee, a DMAT member can be sent to any state in the Union without regard to licensure and certification requirements.

The second reason for Federalization is liability. Individual medical personnel who go across state lines may be subject to personal liability in the event of an allegation of malpractice committed in the course of performance of their work. As Federal employees, however, DMAT members will have the protections of the Federal Tort Claims Act in which the Federal government becomes the defendant in a claim involving alleged malpractice.

The third reason for Federalizing DMATs is so the members can be compensated for their service. DMAT members who are taken from their normal place of employment, and moved into a

distant disaster site for 4 or 5 days, perhaps a week, should not suffer any personal financial hardship.

Each team will have a sponsoring organization, which could be a major medical center, public health agency or a voluntary organization, such as a local Red Cross chapter. The DMAT sponsor will organize and recruit the team, pre-enroll members in the NDMS personnel system to facilitate temporary appointment to Federal status, arrange for training of the team, and coordinate the dispatch of the team. Again, the DMATs are not reserved only for Federal needs. They are equally available to local and state authorities for use in responding to incidents that don't require Federal intervention or assistance. So the DMATs really represent assets, not just at the Federal level, but also at state and local levels.

Currently, about 50 of the 107 NDMS areas are in various stages of DMAT development. Our goal is to have at least one team in each area, and multiple teams in larger population centers. In addition to the general purpose DMATs, some specialized DMATs are being developed to respond to incidents involving mass burn casualties, hazardous materials exposures, etc.

PATIENT EVACUATION

The second key element of the NDMS is patient evacuation. The goal is to use systems that are simple and rapid, to recognize that there will be limited patient information, and also seek to use all types of transportation, but emphasizing air transportation because of the obvious time saving benefits.

The Department of Defense, and particularly the United States Air Force, has unique aeromedical evacuation capabilities, such as the C-9A Nightingale, a modified commercial DC9 passenger jet which can carry 40 litters. It also carries a medical crew of two flight nurses and three medical technicians. This aircraft is used today to transport military patients among various points within the United States and the Air Force operates 11 of these aircraft in the U.S. today.

Various cargo aircraft can also be utilized in aeromedical evacuation. The C-141 is used to transport military casualties from overseas sites to locations back in the continental United States. It can be configured to carry a combination of 48 litter and 70 ambulatory patients, or, with additional litter stanchions, it can carry 103 litter patients alone.

The C-130 is another cargo aircraft that can be used in aeromedical evacuation and can carry approximately 50 to 70 litters. This aircraft has a unique capability in that it does not require an improved runway for takeoff or landing. So if a disaster destroys or seriously damages the airports in the area, this plane could be used to bring in the DMATs and medical supplies and equipment and could land on a short stretch of interstate highway, in a desert, or field, and could also be utilized to evacuate patients.

The Department of Defense, the Department of Transportation, and several U.S. airlines are currently working on a new aeromedical evacuation program as part of the "CRAF"—CRAF standing for "Civil Reserve Air Fleet." This is a program that utilizes commercial aircraft and modifies them so that in a time of major emergency they can be utilized for purposes other than carrying passengers.

The Boeing 767 will be a part of an aeromedical segment of the civil reserve air fleet. The 767 will be configured to carry 111 litters. Twenty-five B-767s will become part of this program. The CRAF aeromedical segment will significantly increase the aeromedical evacuation capability of our nation.

DEFINITIVE MEDICAL CARE

The third key component of the NDMS is definitive medical care. In selecting potential patient reception areas three basic criteria were used. First we focused on areas that had a minimum of 2,500 operating, staffed acute care hospital beds. Second, areas were needed that had an airport which could accept aeromedical evacuation aircraft. Third, areas were selected where there was a facility which could serve as an NDMS local coordinating center. In all but one instance, the NDMS local coordinating centers are either military medical facilities or Department of Veterans Affairs Medical Centers. We do have one civilian coordinating center.

Each NDMS coordinating center has the following major responsibilities: coordinating overall NDMS activities in an assigned geographic area(s); soliciting and organizing community support for the NDMS, including participation by non-Federal hospitals, local emergency medical services (EMS) authorities, government officials and organizations, etc.; coordinating preparation of a local NDMS exercises in the assigned area.

The role of the participating NDMS hospital is to voluntarily pre-commit a percentage of its acute care beds by means of a memorandum of understanding. This not a legally binding contract. The hospital provides a minimum and maximum number of beds that could be made available on activation of the system. In an actual activation, the hospital could either increase or decrease the number of beds to be made available. Obviously, if the hospital admits patients through NDMS, it obligates itself to care for those patients using the generally accepted standards of medical care prevalent in that community. The hospital also commits itself to participate in periodic exercises which will help satisfy the requirements of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

In return, the Federal government agrees to reimburse the hospital, attending physicians, and ancillary services, such as laboratory, anesthesia, blood bank, radiology, etc., on the basis of bills charged. But no money is provided up front.

There are over 1700 non-Federal hospitals currently enrolled in the NDMS. Additional hospital participation is being continuously explored.

Upon arrival, patients will be met by a local DMAT. They will be triaged, and assigned for priority transportation to local NDMS hospitals. Assessment of the patient's individual needs will be made by the DMAT against the available hospital beds in that area. A burn patient will go to a hospital that is best equipped to deal with that type of injury. An orthopedic patient will go a hospital that has an orthopedic bed, etc.

Patients will be transported to the participating hospitals using local ground transportation, and where available, some patients may be transported by local helicopters. Upon arrival at the hospital patients will be provided with whatever definitive medical care is necessary to repair the injury or cure the illness.

NDMS ACTIVATION/OPERATIONS

How does NDMS get activated? Basically three ways. First, a Presidential declaration of a disaster under the provision PL 100-707, the Disaster Relief and Emergency Assistance Amendments of 1988. Second, a request for major medical assistance from a state health official under provisions of the Public Health Service Act. Third, in an overseas conventional conflict the involving the U.S. Armed Forces, where casualty levels are likely to exceed or in fact do exceed the capacity of the DOD-VA medical systems.

In a domestic disaster, if state officials determine that there is a need for outside medical assistance, they may either contact the FEMA or PHS regional office or may directly contact the FEMA National Emergency Coordination Center (NECC) in Washington, D.C. The NECC is staffed and operated on a 24-hour basis. Personnel at the NECC, after receiving a request, would then contact an NDMS duty officer. The duty officer will verify the request and obtain additional information on what is needed where, etc., then the duty officer will obtain a decision to activate from the Assistant Secretary for Health in the Department of Health and Human Services. Upon receiving that decision, the duty officer will notify those organizations that will be necessary to initiate NDMS response and will also activate the NDMS Operations Support Center in Rockville, Maryland. The duty officer will also notify the official who requested assistance of the decision to activate the NDMS.

When NDMS is activated, there are a large number of organizations which would come together and work together.

Various Public Health Service (PHS) components would be activated. At the top is the PHS Office of the Assistant Secretary for Health (OASH), Office of Emergency Preparedness (OEP) (PHS/OASH/OEP).

Key Department of Defense (DOD) components would also be alerted and/or activated. At the top, DOD/DOMS is the Directorate of Military Support, Department of the Army. The Army serves as the DOD executive agent for providing military support to civil authorities.

Several other Federal and non-Federal organizations would also be alerted/activated as part of an NDMS response.

It is important to stress that each of the activated organizations retains full control of its own resources, so there's not going to be anybody saying, "you will do this and you will do that." The purpose of the NDMS Operations Support Center is not to direct or control, but rather to coordinate and process requests for assistance, to assure that those requests are channeled to the appropriate organization and let that organization do what it does best.

In a major catastrophic domestic disaster, normally under the auspices of FEMA, a disaster field office is established in or near the disaster site. As part of that field office an NDMS liaison would be assigned. The NDMS liaison could be a PHS regional health administrator or it could be an individual who is deployed from PHS headquarters. At any rate, as liaison, he/she would be responsible for channeling medical requests from the disaster area to headquarters so that appropriate response could be made, and so that patient evacuation could be provided from the disaster areas to NDMS reception areas.

Aeromedical evacuation liaison teams which belong to the Air Force would determine the requirement for airlift to evacuate patients. The liaison team would communicate that requirement back through the airlift control center, and the aeromedical evacuation control center, and the Military Airlift Command (MAC) would deploy the necessary aircraft.

A control team, another Air Force unit, would be deployed to the airport used as an evacuation point. The control team would control and communicate with the aircraft and participate in the dispatch of the aircraft to NDMS reception areas. The Armed Services Medical Regulating Office would match the evacuation requirements with bed availability based on bed availability reports it had received from local NDMS coordinating centers and regulate the flow of patients from the disaster area to NDMS reception areas. The NDMS Operations Support Center would be in communication with ASMRO and MAC and with the Disaster Field Office in providing assistance to the disaster area and participating in the overall operation.

In a military contingency, the activation of NDMS would work this way. Information on casualty levels would come from the theater of operations, to DOD, specifically to the Office of the Assistant Secretary of Defense for Health Affairs. Those data would be verified by that office and a decision to activate NDMS would be made and communicated to the NECC. An NDMS duty officer would again turn on the elements of the system needed to receive casualties in the designated NDMS reception areas.

It is anticipated that the Boeing 767 aircraft would be used for strategic evacuation from the theater of military operations to various predesignated cities in the continental United States ("hubs"). Some casualties would be hospitalized in NDMS facilities in the hub cities. Other casualties would be redistributed to their final destinations—other NDMS areas within the U.S. A Joint Medical Regulating Office (JMRO) would be established in the theater of operations, to accumulate casualty data for transmission to ASMRO. The JMRO coordinates with ASMRO for casualty regulation within the overseas theater and for return to the continental U.S. The NDMS Operations Support Center would participate in the overall operation.

SUMMARY/BENEFITS

In summary, NDMS is a combination of Federal and non-Federal medical resources coordinated in a single response system to meet civilian needs and also handle an overflow of combat casualties from a conventional conflict.

The key message is that the system can't work and won't work without the participation of local, state, and Federal levels of government, and the voluntary cooperation and participation of public and private sector organizations, institutions and individuals.

As of today, 75 coordinating centers, and 107 geographic areas are participating in the system. Over 1700 participating non-Federal hospitals, and over 110,000 non-Federal hospital beds have been precommitted as part of NDMS. As previously mentioned, about 50 areas are currently establishing DMATs.

What are the benefits of participation in NDMS? NDMS maximizes the use of existing resources. It has created nothing new but taken what's already available and organized it in a new way to cope with incidents that no single entity could ever deal with by itself. The system provides identifiable levels of care and seeks to match the patient with the appropriate level and type of medical care. It integrates the pre-hospital phase with medical facilities. It helps to contain health care costs by avoiding the construction of expensive facilities that are simply standing idle waiting for the "big one" to occur. The facilities and people utilized by NDMS are local resources that are working today to provide care. And, of course, the bottom line is the saving of life and limb—thus reducing mortality and morbidity.

A number of major national professional organizations have endorsed the NDMS, and several additional organizations have endorsements under consideration.

I think the advantages to our nation are obvious. In addition, there are benefits at the state and local level. The better prepared local areas are to support a national need, the better prepared they are to support local, state, or regional needs. With your support and participation, together we can master the challenge, and NDMS will be ready when needed.