# STRATEGIC IMPROVEMENTS TO THE NATIONAL DISASTER MEDICAL SYSTEM (NDMS)

## REPORT FROM THE DISASTER MEDICINE WORKING GROUP NDMS ASSESSMENT PANEL

**SEPTEMBER 2008**

**PREPARED FOR THE NATIONAL BIODEFENSE SCIENCE BOARD**

# NATIONAL DISASTER MEDICAL SYSTEM

*The National Disaster Medical System (NDMS) is a federally coordinated system that augments the Nation's medical response capability. The overall purpose of the NDMS is to supplement an integrated National medical response capability for assisting State and local authorities in dealing with the medical impacts of major peacetime disasters and to provide support to the military and the Department of Veterans Affairs medical systems in caring for casualties evacuated back to the U.S. from overseas armed conventional conflicts.*

*It is the mission of the National Disaster Medical System to temporarily supplement Federal, Tribal, State and Local capabilities by funding, organizing, training, equipping, deploying and sustaining a specialized and focused range of public health and medical capabilities.*

## CHARGE TO THE NATIONAL BIODEFENSE SCIENCE BOARD

The National Biodefense Science Board (NBSB) was asked to provide feedback to the U.S. Department of Health and Human Services on the review of the National Disaster Medical System (NDMS) and national medical surge capacity as required by the Pandemic and All-Hazards Preparedness Act (PAHPA) and as specified by Paragraph 28 of Homeland Security Presidential Directive (HSPD)-21.

## REVIEW PROCESS

To accomplish this task, the request for review was forwarded to the NBSB, Disaster Medicine Working Group. The Disaster Medicine Working Group of the NBSB, in conjunction with support staff, established the NDMS Assessment Panel to provide input for this task. This NDMS Assessment Panel was comprised of a wide range of government, public, and private sector subject matter experts in NDMS and surge capacity (Appendix A). Multiple documents were considered by the Panel (Appendix B), including the "Joint Review of National Disaster Medical System, Consolidated Report of Recommendations, Stakeholder Review Draft, Version 3.0" by the MITRE Corporation ("the MITRE report"). In preparation for making the recommendations, the panel met multiple times via teleconference over several months and attended one face-to-face meeting held on June 19, 2008 in Arlington, VA. The agenda of the NDMS Assessment Panel meeting is provided in Appendix C.

## LIMITATIONS

Due to the request for a timely response and the voluntary nature of the Assessment Panel, this report represents a summary of what are felt to be the most important issues surrounding the review of NDMS and its operation. This is not intended to be a definitive, in-depth review, but rather a compilation of recommendations regarding the future of NDMS and the pending joint review of NDMS by the MITRE Corporation. Several of the recommendations listed below are already under consideration by NDMS but are listed here due to their perceived importance.

# NDMS ASSESSMENT PANEL RECOMMENDATIONS

## STRATEGIC VISION

A clear, current strategic vision for NDMS should be enunciated including how it integrates with the mandate of Emergency Support Function (ESF)-8 Public Health and Medical Services. Currently NDMS is a loosely integrated "system" of a deployable medical response to serve a limited number of patients, a patient evacuation component relying heavily on military transport capability, and a definitive care component provided by volunteer member hospitals. It does not represent an overall system to provide for the medical needs of patients at a time of national need. The adequacy of the current NDMS structure, especially with the lack of integration with public/private sector entities, should be carefully evaluated given the relatively recent establishment of the larger and more comprehensive ESF-8 requirements. It is clear that much can be gained by improving resource sharing partnerships between NDMS, the states, and the healthcare industry with the result being an enhanced standardized nationwide mutual aid capacity. If this new vision involves an increase in the scope of NDMS, a revision and review of the current NDMS concept of operations may be necessary.

## DEVELOPMENT OF AN NDMS / ESF-8 ADVISORY GROUP

Serious consideration should be given to the establishment of ongoing civilian advisory groups for the National Disaster Medical System and for HHS ESF-8 efforts in general. These groups would meet on a regular basis and could assist in the ongoing assessment and improvement of our nation's disaster medical response.

## MONITORING AND DOCUMENTING NDMS IMPROVEMENT

Multiple previous studies and after-action reports have identified opportunities for improvement in the NDMS including the development of a tracking system to monitor the implementation of recommendations made in after-action reports. However, there does not appear to be an organized methodology to track and monitor attempts to address these identified issues. Such a system would potentially be very helpful in assisting in the ongoing improvement of the NDMS. It would also be appropriate to identify the factors which have precluded the development of such a system, such as insufficient staff, staff turnover, unclear responsibilities, lack of funding, etc., so that these primary issues may be addressed.

## MEDICAL RESPONSE PERSONNEL

Medical response personnel (e.g. DMAT volunteers) represent one of the most important NDMS resources which should be carefully nurtured. Every effort should be made to achieve full staffing and operational status for all NDMS Response Teams. This includes

dealing with identified issues in the following Response Team areas: concept of operations, equipment and logistics, command and control, communications, and training. An improved, streamlined application process for DMAT membership is a necessary component, which is currently under development. A uniform, consistent training curriculum should be developed, adopted and implemented across each of the types of volunteer teams which should be consistent with the education and training requirements as defined under HSPD-21.

## NDMS FIELD PERSONNEL CAPABILITY AND GAP ANALYSIS

It is very important to have an accounting/tracking system that can properly register the true capacity of *non-overlapping* NDMS medical response personnel who can be deployed for an event. Consideration should be given to improving the NDMS personnel capability and gap analysis, especially in terms of volunteer personnel conflicting obligations and time to respond, for multiple specified national scenarios. A prototype for consideration has been developed by Dr. Michael Allswede and is included as Appendix E. Given other current Department of Defense (DoD) commitments, a critical reassessment of the availability of DoD resources to assist in a national medical response should be undertaken.

## DEFINITION OF THE NDMS PATIENT

The definition of what constitutes an "NDMS patient" should be reviewed and expanded. For the purposes of reimbursement, serious consideration should be given to including any individual evacuated across state lines (regardless of mode of evacuation) due to a disaster, who requires medical evaluation or care, to be an NDMS patient for a specified limited period of time (including long-term care patients). Reimbursement for care should not be limited to just NDMS hospitals, but should include all hospitals, outpatient clinics, nursing homes, alternate care facilities, shelters, etc., wherever care is provided during time of the event or the following impact period. Reimbursement should continue at 110% of the Centers for Medicare and Medicaid Services' rate. Failure to consider this would severely jeopardize the continued good-faith efforts of the private health care industry to provide immediate post-event care for disaster victims.

## REFINEMENT OF PATIENT MOVEMENT CONCEPT OF OPERATIONS

It is clear that the ability to implement an effective, smooth mass evacuation of patients from an impacted area remains an unresolved issue. This is especially true when dealing with special-needs populations such as children, pregnant women, individuals with disabilities, individuals with serious chronic medical conditions, and the elderly. A first step towards the solution of this problem would be the endorsement of a standard patient movement concept of operations (such as that under development by the Region IV Unified Planning Coalition). Development of rapidly available patient transportation platforms should also be considered. Issues of continuity of patient medical information during and after transport should also be addressed.

## NDMS ELECTRONIC MEDICAL RECORD (EMR)

The Panel applauds the efforts of HHS to improve the efficiency of data recording in the NDMS EMR. Although the advantages of the EMR are many, especially in terms of post-hoc data analysis, its use must not compromise the efficiency of the healthcare providers in the field. Recognizing that the implementation of EMR in the private sector has been fraught with difficulty and multiple failures, real-time usability of the NDMS EMR must be of utmost importance in its final development and deployment. The NDMS EMR platform should use medical IT best practices and protocols that will allow the greatest degree of interoperability with existing and future EMR systems. Along with the EMR, there is a critical need to integrate the various patient tracking and medical resource availability systems in use during a response to ensure that the medical needs of patients are captured and that they are transported to facilities that are ready to receive them and have the medical resources to treat them. In addition, an integrated patient tracking system would assist in connecting and reuniting individual patients and families who are separated due to disasters. NDMS should take the lead in defining the minimal patient data set that is required in a patient tracking system

## IMPROVED COMMUNICATION WITH STATE/LOCAL REPRESENTATIVES

Since complete integration of federal resources with state and local resources is problematic, it would be helpful to, in advance, establish an improved understanding by each of what the other's capabilities and needs are. This is felt to be a significant issue especially for the Disaster Mortuary Operational Response Teams (DMORTs) in terms of dealing with issues such as body disposition, which remains a local responsibility. Serious consideration should be given to returning the DMAT program to its original intent of first building local and state capability and then exporting these volunteer resources through the NDMS for federal assistance to other parts of the country impacted by a disaster. These efforts must be complementary and build upon a national, standardized approach for resource typing, uniform training, field deployment, and logistics support.

## DEVELOPMENT OF IMPROVED NDMS STANDING CAPACITY

Serious consideration should be given to establishing improved alliances between NDMS and the public/private healthcare sector to provide assistance in field care, patient transport, and definitive patient care. These alliances could provide additional assets to augment NDMS operations during a time of national need. This concept could include designating identified healthcare systems as "Federal Disaster Centers" that would then have the necessary training and support to assist in the NDMS mission when called upon.

## FEDERAL REGULATIONS

Criteria should be developed in advance to specify when health-related federal regulations (e.g., Emergency Medical Treatment and Active Labor Act, Health Insurance Portability and Accountability Act) should be considered for temporary suspension in areas affected by a disaster and potentially those areas receiving the evacuated patients. This would facilitate overall patient care during times of extreme medical need. These criteria and the regulations that they would impact should be widely communicated to the private health care sector to assist in their disaster planning and preparation.

## OVERALL NDMS FUNDING

It is clear that the funding level for NDMS is inadequate to support even the current level of the NDMS operation. Every effort should be made to secure adequate, sustained increased funding for the NDMS so it may successfully accomplish its national mission. While an exact figure for increased funding is somewhat problematic, a minimum of an initial 15 per cent increase in budget should be sought, especially with the increased expectation that NDMS "lean forward" for improved response to potential disasters. It is worthy of note that many members of the Panel felt that NDMS would require at least a doubling of its budget to properly achieve its expected level of function. As part of increased funding, serious consideration should be given to performing a systems analysis of the various complex NDMS logistics and systems operations with the intent of improving the efficiency and decreasing the cost of many of these components.

# NDMS ASSESSMENT PANEL ADDITIONAL CONSIDERATIONS

## POTENTIAL FURTHER STUDY

It is recommended that a long term follow-up study, similar in quality and depth of an Institute of Medicine study section, be conducted to focus on these NDMS recommendations.

## REQUESTED RESPONSE TO THESE RECOMMENDATIONS

The Disaster Medicine Working Group requests that the above recommendations be carefully evaluated by the staff of the U.S. Department of Health and Human Services with responsibility for the NDMS. The NBSB would respectfully request feedback at our spring / summer 2009 meeting concerning each recommendation above as to whether it has: 1) essentially already been implemented, 2) will be implemented, or 3) will not be implemented, with reasons if possible.

## OBSERVATIONS OF THE "JOINT REVIEW OF NATIONAL DISASTER MEDICAL SYSTEM, CONSOLIDATED REPORT OF RECOMMENDATIONS, STAKEHOLDER REVIEW DRAFT, VERSION 3.0"

The MITRE report represents the second phase of a proposed three phase review of the NDMS and medical surge capacity to be performed by a private contractor. It is the humble opinion of this Assessment Panel that the MITRE report represents an inadequate and inaccurate response to the expectations of the phase 2 report as outlined in the statement of work dated 12 April 2007. A summary of the comments by the Assessment Panel on the MITRE report are included in Appendix D. A detailed compilation of the comments made by the Panel concerning this report is available by request.

## LIST OF APPENDICES:

# APPENDIX A

Disaster Medicine Working Group
National Disaster Medical System Assessment Panel

List of Participants

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# APPENDIX B

List of Documents Considered

National Disaster Medical System Senior Policy Group 2007-2009 Issues Paper (2007).

Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies. CNA Corporation (2004). http://www.hhs.gov/aspr/barda/documents/mscc_sept2004.pdf

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Report on the National Disaster Medical System 2005 Hurricane Response: Compiled

from NDMS Response Team Commander's Meeting & After Action Reports. Reno, NV, Federal Emergency Management Agency (2006).
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Speers, R., T. Jaditz, et al. (2002). Assessing NDMS Response Team Readiness: Report to DMAT and NMRT Team Commanders. Alexandria, VA, CNA Corporation.

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# APPENDIX C

Disaster Medicine Working Group
National Disaster Medical System Assessment Panel

June 19, 2008
Meeting Agenda

# Disaster Medicine Working Group
# National Disaster Medical System (NDMS) Assessment Panel Meeting

## Sheraton National Hotel

## 900 South Orme Street

## Arlington, Virginia 22204

## June 19, 2008, 8:00 A.M. – 3:00 P.M., EST

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| Time | Event |
|---|---|
| 7:30 – 8:00 | Registration |
| 8:00 – 8:05 | Welcome<br>*Stephen Cantrill, M.D.*<br>*Chair, NDMS Assessment Panel*<br>*Co-Chair, NBSB Disaster Medicine Working Group*<br>*National Biodefense Science Board* |
| 8:05 – 8:15 | Member Introductions<br>*NDMS Assessment Panel* |
| 8:15 – 9:00 | NDMS & U.S. Department of Health and Human Services<br>*Kevin Yeskey, M.D.*<br>*Deputy Assistant Secretary and Director*<br>*Office of Preparedness and Emergency Operations*<br>*Office of the Assistant Secretary for Preparedness and Response*<br>*U.S. Department of Health and Human Services* |
| | Questions and Answer Session |
| 9:00 – 9:30 | Compensation for Healthcare/Standing Capacity Care<br>*Scott Lillibridge, M.D.*<br>*Director, National Center for Emergency Preparedness and Response*<br>*Assistant Dean, School of Rural Public Health*<br>*Texas A&M Health Science Center* |
| 9:30 – 10:00 | Electronic Medical Records & Joint Patient Assessment and Tracking System<br>*CAPT Ana Marie Balingit-Wines*<br>*Chief Nurse, National Disaster Medical System*<br>*Office of Preparedness and Emergency Operations*<br>*Office of the Assistant Secretary for Preparedness and Response*<br>*U.S. Department of Health and Human Services* |
| 10:00 – 10:15 | Break |

| Time | Event |
|---|---|
| 10:15 – 11:15 | NDMS Teams<br>DMORT<br>*John Reed*<br>*President-Elect, National Funeral Director's Association*<br>*Dodd and Reed Funeral Home*<br><br>Mass Fatality Management: Policy Issues for Consideration<br>*John H. Fitch, Jr.*<br>*Senior Vice-President, Advocacy*<br>*National Funeral Directors Association*<br><br>DMAT<br>*Ronda Lacey*<br>*DMAT- AL-1* |
| 11:15 – 11:45 | EMS Disaster Response using the EMAC Process<br>*Joseph W. Schmider*<br>*Director, Bureau of Emergency Medical Services*<br>*Pennsylvania Department of Health* |
| 11:45 – 12:15 | Break for Lunch |
| 12:15 – 1:00 | Region IV ESF8 Unified Planning Coalition: Patient Movement Con-Ops<br>*Ray Runo, M.P.A.*<br>*Director, Office of Emergency Operations and ESF8 Emergency Coordinating Officer*<br>*Florida Department of Health*<br><br>*Mike Jacobs, M.A.*<br>*Operations Planning Manager and Deputy ESF8 Emergency Coordinating Officer*<br>*Florida Department of Health*<br><br>*Jeff Jeffries, Jr., PA., M.A., CEM*<br>*Director of Planning and State Emergency Preparedness Coordinator*<br>*Georgia Department of Human Resources*<br><br>*Michael Vineyard, FAAMA*<br>*Deputy Director of Operations, Office of Preparedness and Emergency Operations*<br>*Office of the Assistant Secretary for Preparedness and Response*<br>*U.S. Department of Health and Human Services* |
| 1:00 – 1:30 | Military Manpower<br>*James Terbush, M.D., M.P.H.,*<br>*CAPT, U.S. Navy, MC, FS, N-NC,*<br>*Peterson Air Force Base* |
| 1:30 – 3:00 | Way Forward/Reporting Strategy<br>*Stephen Cantrill, M.D.* |

# APPENDIX D

Disaster Medicine Working Group
National Disaster Medical System Assessment Panel

Summary of comments on the MITRE Report

## OVERALL

- It appears that the authors of the report lacked a full understanding of how NDMS actually works and how it does/does not interface with the established health care system.
- The report assumes that NDMS, as currently configured, is appropriate and optimum.
- The report did not address how deficiencies noted in previous evaluations and made evident by previous disaster responses where addressed.
- Objective assessment measures were rarely enumerated.
- The report had insufficient input from on-the-ground NDMS personnel.
- The report could have benefited from a more rigorous systems engineering approach to NDMS operations and limitations.
- The report does not represent an adequate response for the listed deliverables.

## SPECIFIC AREAS:

## DMAT READINESS

- This assessment of DMAT readiness is flawed by the lack of sufficient input from individuals directly involved in the immediate response component. The statement that 50 DMATs could be fielded simultaneously today runs counter to all other data on DMAT readiness.
- Currently there does not appear to be an assessment of DMAT personnel competing obligations in terms of availability. (A potential methodology to more completely perform this gap analysis given in Appendix E);
- DMAT personnel recruitment and retention is an important issue deserving of more attention.

## THE ROLE OF DOD IN FULFILLING FEDERAL MEDICAL RESPONSE REQUIREMENTS

- There appears to be an over-reliance upon DoD contributions to a worst case Federal medical response requirement given that we are currently engaged in two wars. This over-reliance tends to decrease the gap estimate to be filled by HHS. A gap analysis should be performed excluding (or minimizing) DoD participation. There is also no time estimate for the deployment of any DoD assets.

## EFFECT OF PREVIOUS STUDIES AND AFTER-ACTION REPORTS

- Over the years, multiple studies and after-action reports have cited areas for improvement in NDMS (some very significant). There is no discussion in the MITRE report of how these past recommendations have been addressed (or if they have been).

## REIMBURSEMENT ISSUES

- Reimbursement issues, especially reimbursement to the private sector for care provided need to be better addressed in the report. This is obviously a complex issue due to multiple patient funding sources.

## TELEMEDICINE

- Telemedicine appears to receive excessive emphasis in the report. Issues of telemedicine cost-effectiveness and utility in deployment situations should be addressed before additional extensive funding is requested.

## NDMS MEMBER HOSPITAL CAPACITY ASSESSMENTS

- The statement that 600,000 hospital beds could be rapidly made available to NDMS suggests a lack of understanding of the current status of the civilian healthcare system. The problem of boarding patients in emergency departments across the country while waiting for inpatient beds to become available has become an endemic problem which calls into serious question the validity of hospital estimates of how many NDMS patients could be accommodated at any one time.
- The cited hospital occupancy rate of 70% appears to be a significant underestimate, especially in urban areas, which compromise a significant number of NDMS member hospitals.

# APPENDIX E

Proposed methodology for NDMS Capability and Gap Assessment

## INTRODUCTION

This is an outline of a six step analysis that may serve to improve more accurately assess the capabilities, gaps, and critical needs of the National Disaster Medical Service (NDMS). It is provided to the Disaster Medicine Working Group NDMS Assessment Panel for their consideration. The examples contained in the following tables are intended to be representative in nature only. These example assumptions and methods of analysis are admittedly incomplete and should be considered as a place to start the analysis, in other words, "straw men". To fully develop this methodology, a small working group may be supported to work through the tables to complete the assumptions and methods of analysis.

## SHORTCOMINGS OF THE MITRE REPORT

A common flaw in the assessment of disaster response capability is optimism. A manifestation of this flaw in the *Joint Review of National Disaster Medical System (NDMS). Ver 3.0* report is the reliance of "best case" estimates for NDMS response. Taking a more pessimistic, or some may say realistic approach to the problem, the Mitre Corp. report has three basic shortcomings with respect to NDMS response capacity assessment:

- NDMS response volunteers are not assessed for competing obligations;
- NDMS response capability and DoD assets are estimated without a relevant timeframe of arrival; and
- NDMS hospital response capability within a given scenario is not analyzed in context of the degradation of the NDMS over time.

## SUGGESTED ADDITIONAL ANALYSES

In the following examples, a six step process is proposed to assess the maximum capability of the NDMS response; to plot that capability with respect to the needs of a stricken population in the context of each of the selected Department of Homeland Security scenarios; and then to perform a critical gap analysis of capability relative to need. By performing this analysis, a list of high, moderate, and low priority needs may be generated to guide funding and future development of disaster response capability within the United States.

1. To assess actual availability of volunteers, each NDMS volunteer should be queried for conflicting obligations to include:
    a. Military obligation
    b. State and local disaster response team
    c. Actual availability (in # of days) that they could deploy away from their practice or employment with specific attention to:
        i. Number of days already obligated by training

ii. Length of financial support if any they would receive during deployment

2. Construct an NDMS asset data table:

| **DMAT TEAM (or other NDMS asset)** | **PHYSICIAN DAYS** | **NURSE DAYS** | **LOG-ADMIN DAYS** | **MAX FULL STRENGTH DAYS** |
|---|---|---|---|---|
| 1….. | | | | |
| 54 | | | | |
| TOTALS | | | | |

3. Construct scenario-specific NDMS degradation analyses to include DMAT assets geographically engaged with the struggle, and the ability of NDMS special function medical units to respond to specific disaster needs:

| **Scenario** | **DMAT RESPONSE** | **NDMS HOSPITAL** | **DoD ASSETS** | **MAX RESPONSE CAPACITY** |
|---|---|---|---|---|
| 10 KT IND | Subtract engaged state teams or non decon teams | ICU and Bone Marrow Transplant Units | Subtract war-fighting support units | (NDMS Capability * degradation) + Hosp + DoD |
| Anthrax | Subtract engaged state teams or down-wind teams | Subtract needed capability for second attack | Subtract war-fighting support units | (NDMS Capability * degradation) + Hosp + DoD |
| Pan Influenza | Subtract all state team or full time professionals | Assume 100% + occupancy | Consider need to preserve war-fighting units | (NDMS Capability * degradation) + Hosp + DoD |
| Plague | Subtract all state team or full time professionals | Assume 100% + occupancy in infectious areas | Consider need to preserve war-fighting units | (NDMS Capability * degradation) + Hosp + DoD |
| Blister Agent | Subtract engaged state teams or non decon teams | Subtract needed capability for second attack | Subtract war-fighting support units | (NDMS Capability * degradation) + Hosp + DoD |
| TICs | Subtract engaged state teams or non decon teams | Subtract needed capability for second attack | Subtract war-fighting support units | (NDMS Capability * degradation) + Hosp + DoD |
| Chlorine | Subtract engaged state teams or non decon teams | Subtract needed capability for second attack | Subtract war-fighting support units | (NDMS Capability * degradation) + Hosp + DoD |

| Scenario | DMAT RESPONSE | NDMS HOSPITAL | DoD ASSETS | MAX RESPONSE CAPACITY |
|---|---|---|---|---|
| Earthquake | Subtract engaged state teams | Assess daily census average among NDMS facilities | Subtract war-fighting units | (NDMS Capability * degradation) + Hosp + DoD |
| Hurricane | Subtract engaged state teams | Assess daily census average among NDMS facilities | Subtract war-fighting units | (NDMS Capability * degradation) + Hosp + DoD |
| RDD | Subtract engaged state teams or non decon teams | Subtract needed capability for second attack | Subtract war-fighting support units | (NDMS Capability * degradation) + Hosp + DoD |

4. Develop injury pattern and temporal victim degradation with and without available NDMS assets to determine the impact of NDMS assets on mortality:

| Scenario | Time for 50% victim death | NDMS CAPABILITY AVAILABLE IN TIME | DoD CAPABILITY AVAILABLE IN TIME | ESTIMATED IMPACT OF NDMS ON MORTALITY |
|---|---|---|---|---|
| 10 KT IND | Immediate: 90% in first 24 hrs<br>Delayed: BM Failure-weeks | Immediate: 0%<br>Delayed: 3-5% of ICU and Bone Marrow Transplant | Available DoD Medical Centers | |
| Anthrax | Depends on recognition-est 50% by day 4 | Assets deployable within 24 hrs | Assets deployable within 24 hrs | |
| Pan Influenza | Days-Weeks | Near 0% | Near 0% | |
| Plague | Days-Weeks | 3-5% of capacity | Near 0% | |
| Blister Agent | Immediate: Airway in first 24 hrs<br>Delayed: Bone Marrow Failure: weeks | Immediate: 0%<br>Delayed: 3-5% of ICU and Bone Marrow Transplant | Available DoD Medical Centers | |
| TICs | Immediate: many in first 24 -chemical dependant | 3-5% of ICU and Toxicology programs | Available DoD Medical Centers | |
| Chlorine | Immediate: many in first 24<br>Delayed: Days-weeks | 3-5% of ICU and Toxicology programs | Available DoD Medical Centers | |

| Scenario | Time for 50% victim death | NDMS CAPABILITY AVAILABLE IN TIME | DoD CAPABILITY AVAILABLE IN TIME | ESTIMATED IMPACT OF NDMS ON MORTALITY |
|---|---|---|---|---|
| Earthquake | Immediate: 90%<br>Delayed: Lack of medical Care | Immediate: 0%<br>Delayed: Near 100% | Available DoD Medical Centers and mobile hospitals | |
| Hurricane | Immediate: 90%<br>Delayed: Lack of medical Care | Immediate: 0%<br>Delayed: Near 100% | Available DoD Medical Centers and mobile hospitals | |
| RDD | Immediate: 90% in first 24 hrs<br>Delayed: BM Failure-weeks | Immediate: 0%<br>Delayed: 3-5% of ICU and Bone Marrow Transplant | Available DoD Medical Centers | |

5. Develop a gap analysis that is specific to each scenario. Use only NDMS assets available within a relevant timeframe. DO NOT USE TOTAL NDMS CAPABILITY ASSUMPTIONS.

6. Develop a "worth statement" for NDMS assets in the context of the DHS planning scenarios. Develop strategies that can be expected to save lives within a scenario and timeframe of response and support them. Consider redistribution of financial and administrative support for assets that are unlikely to contribute to life-saving and/or re-invest in local capabilities that meet gap analysis.