

Department of Veterans Affairs (VA)  
Office of Policy, Planning, and Preparedness



# SURVEY ASSESSMENT OF VA MEDICAL CENTERS' EMERGENCY PREPAREDNESS

Final Report

April 15, 2005



## Acknowledgements:

The writers of this report would like to acknowledge various individuals for their contribution to this report, including the following VA Working Group Members and Consultants who participated, and provided guidance, throughout the period of this project:

Name	Title/Office Represented
Peter Brewster	Training/Exercise Specialist, Emergency Management Strategic Healthcare Group (EMSHG), VHA
Arnie Bierenbaum	Director Safety and Technical Services VHA Operations and Management
Maryann Bruno	Health Systems Specialist, Network Office, VHA
Clarisa Rodrigues Coelho	VA Project Manager, Program and Management Analyst, VA Office of Policy, Planning, and Preparedness
Marcelle Habibion, Ed.D.	Program and Management Analyst, VA Office of Policy, Planning, and Preparedness
Lucretia McClenney	Special Assistant to the Assistant Secretary, VA Office of Policy, Planning, and Preparedness
Reuben Pinkson	Area Emergency Manager, EMSHG, VHA
Julie Schroeder	Program Analyst, VA Office of Policy, Planning, and Preparedness
R. Tom Sizemore, III, MD	Acting Director, Office of Operations & Readiness, VA Office of Policy, Planning, and Preparedness
Ray Wilburn	Acting Deputy Assistant Secretary for Planning & Evaluation, VA

These individuals served as Subject Matter Experts (SME) and participated in stakeholder interviews:

Stakeholder	Title
Mark Brown	Director Environmental Agents Public Health and Environmental Hazards Office
Michael Vojtasko	Acting Chief Consultant, EMSHG, VHA
Tom Sizemore	Acting Director, Office of Operations and Readiness, VA
Arnie Bierenbaum	Director Safety and Technical Services VHA Operations and Management
Joseph Kime	Program Analyst, Office of Acquisitions and Material Management
Wes Robbins	Director Emergency Pharmacy Services National Acquisitions Center, Hines Depot
Catherine Maginnis	Director of Network Support – East
Robert Lynch	Director Network 16
Jim Farsetta	Director Network 3
Ed Tucker	Director Houston VAMC
Michael Moreland	Director Pittsburgh VAMC

The 143 VA Medical Centers (VAMC) and 21 Veterans Integrated Service Networks (VISN) that participated in the survey.



# Survey Assessment of VA Medical Centers' Emergency Preparedness

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## Survey Assessment of VA Medical Centers' Emergency Preparedness

### EXECUTIVE SUMMARY

Emergency Preparedness supports the “4<sup>th</sup> Mission” of the Department of Veterans Affairs (VA) which is to provide medical backup to the military health system during war or national emergency. During an emergency, “VA will provide critical assistance that includes designating and deploying available medical, surgical, mental health and other health service support assets.”<sup>1</sup> To assess current readiness, VA’s Office of Policy, Planning, and Preparedness requested that Booz Allen Hamilton evaluate Veterans Integrated Service Networks (VISNs) and VA Medical Centers (VAMC) on their level of “all-hazards” preparedness, with a special emphasis on preparedness for Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) attacks. This preparedness assessment responds in part to the requirements of *Supplemental Appropriations for Evaluation of VA’s Emergency Preparedness* (P.L. 107-38) and to the requirements of the *Government Performance and Results Act of 1993* (P.L. 103-62).

To accomplish this objective Booz Allen, working in collaboration with VA experts and stakeholders, developed a preparedness survey instrument customized to the particular needs and goals of the VA. This instrument is based in large part on a survey tool previously developed by Booz Allen for the Department of Health and Human Services’ Agency for Healthcare Research and Quality (AHRQ) and the Health Resources Services Administration (HRSA), to assess preparedness of HRSA-funded hospitals nationwide. Approximately 60% of the primary questions in the AHRQ/HRSA survey and the VA survey tool are identical. The AHRQ/HRSA bioterrorism survey tool was developed in collaboration with a panel of national experts over a period of 20 months. It was administered, during a pilot phase, to 109 non-federal hospitals in eight states and two VA hospitals. This bioterrorism survey was modified by AHRQ/HRSA to create a CBRNE preparedness assessment tool. That hospital survey tool was then adapted by Booz Allen and the VA working group to assess all hazards preparedness in the VA environment. The questions in the VA survey were categorized in a framework consistent with the National Fire Protection Agency 1600 Standard for Disaster/Emergency Management and Business Continuity Programs. The VA survey was distributed to VA facilities and VISNs as a Web-based survey in November and December of 2004. There was a 100 percent response rate of 143 facilities and 21 VISNs. This report is an analysis of that response.

The AHRQ/HRSA non-federal hospital survey was subsequently distributed in January and February of 2005, and approximately 2,500 non-federal hospitals responded. Booz Allen expects

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<sup>1</sup> Simonson, Stewart. *Safeguarding the Nation: HHS and VA Emergency Preparedness Collaborations*. Testimony before the U.S. House of Representatives Committee on Veterans Affairs by Assistant Secretary of Public Health Emergency Preparedness, U.S. DHSS. August 26, 2004.



to complete the analysis of the non-federal hospital data in late spring or early summer of 2005. Of the 45 primary questions in the VA survey, 26 are identical to the non-federal hospital survey. Booz Allen will provide VA with a comparison of its level of preparedness to hospitals in the private sector as soon as the data is available.

The VA survey contained 45 medical center questions and 17 VISN questions. However, depending upon the nature of the initial response, there may have been follow-on questions creating a maximum potential of 269 facility questions and 101 VISN questions. As a self-reported survey, it is subject to both over and under-reporting.

The findings in this survey cover a broad range of capabilities and are presented in 10 categories of preparedness drawn from the National Fire Protection Association (NFPA).<sup>2</sup>

- Program Committee, Coordinator, and Administration
- Planning
- Direction, Control, and Coordination
- Communication and Warning
- Crisis Communications and Public Information
- Resource Management
- Operations, Procedures, and Mutual Aid
- Logistics and Facilities
- Training, Exercises, Evaluations, and Corrective Actions
- Decontamination

### **Preparedness Strengths**

The findings of this survey suggest that VA has unique assets relevant to preparedness. This is especially true with regard to surge capacity. VA hospitals often have authorized beds available. Though surplus staffed beds may be limited, VA has a modest ability, using unique mechanisms, through which it can provide additional emergency medical personnel. These mechanisms were utilized in 2004 when Hurricanes Charley, Frances, Ivan, and Jeanne pummeled the state of Florida, and more than 400 VA employees from across the country were deployed to devastated communities in that state.

Another dimension of surge capacity relates to medications and supplies. Each VAMC is equipped with a medication and supply cache that enables that facility to care for 1,000 to 2,000 patients over one to two days until the Strategic National Stockpile and/or other pharmacy cache reserves arrive. Additional medications and supplies can be obtained from other VA facilities or VISNs, as well as from VA's National Acquisition Center (NAC). This broad ability to draw on multiple resources, coupled with the strong commitment to planning that was revealed by this survey, provides a level of surge capacity that few private sector facilities can replicate.

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<sup>2</sup> National Fire Protection Association. (2004). NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity Programs Quincy, MA



VA has an impressive pool of isolation rooms nationwide – approximately 1,800. Also of note are the two Decontamination Centers of Excellence located at the Bay Pines and Little Rock VAMCs. These Centers train staff from other VAMCs in decontamination techniques. These important resources are likely to have an impact on overall decontamination capability. VA has also embarked on a needs-based allocation of decontamination equipment that takes into account the availability of community resources.

### Population-Based Risk and VA Preparedness

The Centers for Disease Control's (CDC) City Readiness Pilot Program has identified 21 high risk urban centers based on population and strategic significance.<sup>3</sup> VAMCs in or near each of these cities were identified based on Metropolitan Statistical Areas. Booz Allen calculated preparedness scores for each of the VAMCs in or near these cities and displayed these findings on a map in Exhibit 1. The 21 cities are listed in the demographics section of the main report in Exhibit 12, page 22.

Exhibit 1 – Total Preparedness by VISN and Population Center

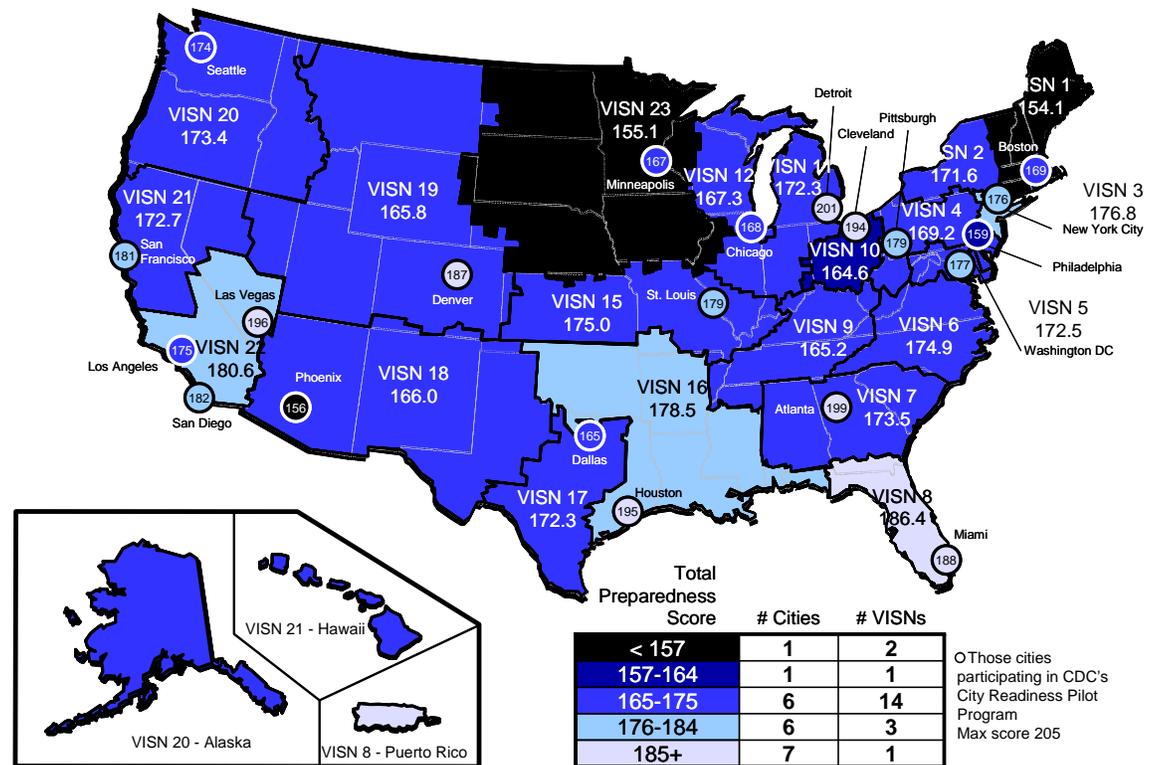


Exhibit 1 shows relatively high levels of preparedness on the West Coast, in the Southeast, and on the Gulf Coast corresponding to regions at risk for hurricanes, floods, earthquakes, or some combination of those three natural events. VAMCs in VISN 8 reported the highest average score (186.4). VAMCs in VISNs 1, 10, and 23 reported the lowest average levels of preparedness.

<sup>3</sup> Obtained from <http://www.bt.cdc.gov/crifacts.asp>



With the exceptions of Phoenix, Dallas, Philadelphia, and Los Angeles, VAMCs in the 21 cities analyzed<sup>4</sup> met or greatly exceeded the preparedness of other VAMCs in their respective VISNs.

### **Selected Opportunities for Improvement**

Selected findings from the survey suggest opportunities for improvement that are described below. We recommend that readers review the entire document to understand the full breadth of findings and to more adequately understand their context. The selected findings do not represent deficiencies in compliance with VA internal policies and standards. Rather these findings are suggested areas for improvement based on expert opinions regarding “desirable” or “best practices.” This expert consensus is based largely on three primary sources: prior deliberations of the AHRQ/HRSA survey expert panel, qualitative interviews with VA preparedness experts, and input from Booz Allen SMEs. These and other findings and recommendations are offered to provide constructive guidance in the continual improvement process associated with the pursuit of preparedness.

- Ninety-seven percent of VAMCs (139) report having an Emergency Management Committee (EMC); and the balance plan to have them in place by June 2005. However, there is broad variability in the composition of EMCs. Physicians, radiation safety officers, mental health professionals, and other key participants are inconsistently represented. Booz Allen recommends that VA more clearly define the preferred composition of these committees.
- Ninety-three percent of VAMCs (133) have an Incident Command System (ICS), yet only 41 percent of these sites have trained all formally-assigned personnel in their ICS roles. Such training would enhance the effectiveness of the ICS.
- Fifty-four percent of the VAMCs (77 facilities) reported a designated budget for preparedness activities. Of those VAMCs that have a budget, 44 percent (34 hospitals) had actually received the funds at the time of the survey. Booz Allen believes it would be beneficial to establish a “line item” for preparedness to better track allocation of resources and expenditures over time.
- Eighty-five percent of VAMCs (122) indicate having back-up arrangements for critical infrastructure; and in cases of electrical power and drinking water, approximately 95 percent had backup arrangements. VA should create a more standardized definition of critical systems and strive for 100 percent compliance in those categories
- While VAMCs were diligent in establishing Emergency Operations Plans (EOPs) with 100 percent compliance, only 53 percent of the VAMCs’ clinical laboratories (76 facilities) reported having a disaster response plan for managing a mass casualty or bioterrorism event.
- The 16 VAMCs with clinical laboratories that possess and use Category A bio-agents meet strict security standards verified by annual inspections. However, in a bioterrorist attack,

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<sup>4</sup> Those 21 cities participating in the CDC City Readiness Pilot Program



other VAMC clinical laboratories may confront such agents. While 43 percent of VAMC labs (61) have written procedures for the handling and transport of Category A bio-agents and 44 percent (63) have a protocol for working with the Laboratory Response Network (LRN), Booz Allen recommends that all clinical laboratories institute such protocols.

- Only 37 percent of VAMCs (53) report having a mechanism to provide all hazards training to their emergency medical staff. This suggests a low level of awareness and utilization of available training through the Employee Education System--a valuable asset.
- Eighty percent of VAMCs (114) annually test their callback cascade for essential staff. Employee turnover and changing phone numbers create potential failure points in these cascades. Booz Allen recommends testing these critical callback systems at least annually in 100 percent of VAMCs, with even more frequent testing advisable.
- Eighty-five percent of VAMCs (122) reported having connectivity to a real time public health warning system. Health departments are most likely to communicate with medical centers first, which then notify the VISN, and which in turn notifies the Central Office. It is therefore important that VA strive for 100 percent connectivity of VAMCs to real time warning systems. For purposes of redundancy, it would be advisable if 100 percent of VISNs also had such connectivity.

### **Overarching Themes and Recommendations**

From the detailed findings in this report, a number of overarching themes and recommendations emerged. These themes and recommendations are presented below:

#### **1) Continue to strive for 100 percent compliance and greater consistency in planning activities and in establishing command and control structures**

VA facilities and VISNs scored high in most areas related to plans and planning. However, since the planning activity is relatively low in cost but potentially high in yield, 100 percent compliance in specified planning activities should continue to be the goal. In some cases there should be more focus on the comprehensiveness and consistency of individual plans as well as the need to readdress them on an annual basis. This may be facilitated by a checklist approach, which is described below. VA also scored high in most areas relevant to the establishment of command and control structures such as Emergency Management Committees (EMC), Incident Command Systems (ICS), and Emergency Operations Centers (EOC). In the case of EMCs, a more standard membership composition should be considered.

#### **2) Continue to strive for 100 percent redundancy of all critical systems at each VAMC**

As noted above, more than 85 percent of VA facilities indicated they had backup arrangements in the event of critical systems failure. Of these, over 95 percent had backup agreements for electrical power and drinking water. However, there was some variability regarding which critical systems had redundancy. The specific systems that are included in



the critical category should be well defined so that expectations are clear at the facility level. In those systems defined as critical, the objective should be 100 percent redundancy.

**3) Introduce greater accountability in the approach to training, and place greater emphasis on measurement and the reporting of role based competencies**

The infrequent nature of natural disasters and the rarity of domestic terror events make the maintenance of preparedness and response competencies an ongoing challenge. The need to train VA staff more broadly, including providers, was a recurring theme in various categories of analysis; this needed training includes: incident command training, Emergency Operations Plan (EOP) training, decontamination and Personal Protective Equipment (PPE) training, clinical training, and other relevant topics cited throughout this report. These training gaps are not unexpected in a limited resources environment where other urgent patient care priorities compete for attention daily. The challenge is amplified by the need to continually refresh and evaluate the competency of the VA workforce in a role specific fashion. This is a challenge faced by the preparedness community in general. Nonetheless, VA should devote the necessary resources to provide greater accountability in training.

Assessment and reporting of training impact should occur on the individual, station, and VISN levels. To achieve this goal, a comprehensive strategy on preparedness training and competency based assessment should be developed. This strategy should include learning technologies that can be used to train a large workforce and measure the impact of that training on role based competencies over time. It should also include sharing and absorbing best practices from other governmental agencies faced with similar challenges such as the Department of Health and Human Services (HHS) – especially HRSA and CDC, the Department of Defense (DoD), and others. Examination of best practices should extend beyond the public sector to leverage experience from the private sector, in which increasingly faces ongoing workforce training demands in our knowledge intensive economy.

**4) Continue to assess distribution of expensive resources based on threat assessments, community resources, and facility characteristics**

While even “low risk” communities can be terrorist targets, resources are finite and should be rationally distributed. It is beyond the scope of this survey to determine appropriate allocation at specific locations and in many cases current allocations may be appropriate. Assessment of the distribution of key assets should be based on the perceived need at specific institutions. This may lead to a tiered definition of preparedness with different VAMCs falling into different tiers.

The VA has already embarked on a needs based assessment to distribute appropriate decontamination equipment. This approach should extend to other expensive assets such as isolation rooms. Assessments should focus on the quantitative distribution of resources (for example, the number of isolation rooms in urgent care/emergency departments versus inpatient wards) and should account for different preparedness goals, so that smaller facilities



in less densely populated areas are not held to the same standard as large urban, academic facilities. It should be noted, however, that facility size and location are not the only factors: community resources are also a critical consideration. A small VAMC in a rural environment may be the most significant resource in that community, so a significant level of preparedness and resource allocation may be warranted.

**5) Consider the use of more standardized and concise checklists to guide and assess minimum levels of preparedness**

Checklists have been important in assuring thoroughness and safety in the aerospace industry, and they have recently been shown to be very useful in promoting quality and safety in intensive care units as well.<sup>5</sup> The VA's *Emergency Management Program Guidebook* already provides many detailed templates and guidelines to help facilities design their approach to preparedness. However, it may also be useful to provide a concise facility checklist to define minimum expectations in key areas. This checklist should correspond to the preparedness expectations at a facility or class of facilities. This will help standardize the approach to preparedness, provide well defined objectives for managers, and provide a basis for facility specific assessments in the future. The questions in this VA preparedness survey may be used as a starting point to create facility, and VISN based preparedness checklists.

**6) Augment survey data with site visits to selected high scoring and low scoring facilities**

The apparent range of preparedness indicated by this initial survey suggests a number of opportunities for further exploration. The VA should consider making site visits to a number of the facilities in both the higher and lower ranges of preparedness. The purpose of site visits would be at least twofold:

- Validate and expand upon the findings in this first screening survey and use lessons learned to enhance the survey in the future.
- Identify best practices in the high scoring facilities, and assist lower scoring facilities to improve in areas of greatest challenge.

**7) Consider establishing a mentoring program between high and low scoring facilities with otherwise similar characteristics**

The HRSA Trauma-EMS Program has recently developed a mentoring program for trauma systems in different states. In this model, more fully developed trauma systems mentor systems in more basic stages of development. It would be useful to explore the strengths and weaknesses of this approach and consider its applicability to VA preparedness.

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<sup>5</sup> "Pronovost, Peter J. Acute Decompensation after Removing a Central Line," *Annals of Internal Medicine*; June 15, 2004 1031



**8) Emphasize knowledge sharing and benchmarking with the private sector and other federal agencies, especially HRSA, CDC, and DoD, as well as with the private sector**

The preparedness challenges facing VA are shared by other agencies and organizations, and it would be prudent to proactively share insights and experience with these agencies and programs. VA has already established an Office for Health Policy Coordination to collaborate with HHS health programs, providing a valuable foundation on which to build. Examples of other agencies and programs that are particularly relevant are mentioned below.

The HRSA National Hospital Bioterrorism Preparedness Program is administered through state departments of health and is designed to help non-federal hospitals improve their preparedness. This program, and the states and hospitals it serves, face many of the same challenges as those facing VA. Challenges of training and education are particularly relevant, so common approaches and resources might be explored. VA has as much to offer as it has to learn (for instance, VA Decontamination Centers of Excellence represent a current best practice in decontamination training).

DoD and VA already collaborate in the production of distance learning materials. However, collaboration around more cutting edge learning technologies could be explored as both organizations face similar challenges identifying cost effective methods to provide ongoing training and role based assessment of competency for a large workforce.

**9) Refine this survey and re-administer to track progress; then compare with the AHRQ/HRSA survey of non-federal hospitals**

This VA survey, like all surveys, will require refinement over time. Experience and feedback from the field will inform nuances of wording and useful areas of inquiry. Refinements should be made while preserving consistency so that serial assessments can be made over time. Such assessments, rather than a single snapshot in time, provide the most valuable information.

As noted earlier the AHRQ/HRSA Civilian Hospital Survey was developed to assess the preparedness of non-federal hospitals. In January and February of 2005 approximately 2,500 non-federal hospitals responded to this survey, and the analysis should be complete in late spring 2005. Because the VA survey was based in large part on this non-federal hospital survey (with 26 identical primary questions), this provides an opportunity for VA to compare its preparedness status with these hospitals.

It is important to exert care when both the VA and AHRQ/HRSA surveys are refined so that a sufficient number of identical questions are preserved in order to maintain ongoing comparability. Close communication between the two survey workgroups (VA and AHRQ/HRSA) will facilitate coordinated refinement of each survey, and enhance the value of both.



## **10) View preparedness as a dimension of quality and safety, and consider monitoring preparedness with existing internal and external reporting systems**

Preparedness, like quality, is a goal that is constantly pursued but never completely achieved. Also like quality, preparedness requires commitment and vigilance at every level of an organization so that a culture is created to support it. Adequately prepared staff and facilities are most likely to provide safe, high quality care under adverse conditions. To put preparedness and quality on an equal footing, VA might consider using some of the same systems to monitor them. Those systems include the VA's internal and external safety reporting systems (the VA National Center for Patient Safety Reporting and the National Aeronautics and Space Administration (NASA) Patient Safety Reporting System). These systems currently monitor adverse events and near misses in VA to improve quality. VA might consider using these anonymous systems to help monitor levels of facilities preparedness as well.

### **Conclusions**

This study shows that the VA has significant strengths as a community partner in preparedness. Particular strengths pertain to various elements of surge capacity and preparedness planning. This survey suggests that there are some opportunities for improvement. This should not be surprising since preparedness, like quality, is a goal that is never fully achieved. As preparedness objectives are met, new goals are often set in the struggle to defend ourselves from incidents of an undefined nature and severity at unexpected times and places.

The findings presented in this survey represent a snapshot of preparedness at a single point in time specifically in November and December 2004. A single survey cannot fully assess the preparedness of a particular VAMC or VISN, or of the entire system. This survey is a screening tool to help identify strengths and weaknesses and to help prioritize future inquiries, interventions, and resource allocation. Other sources of information should be used to augment and refine this assessment. Preparedness is not a definable end state but rather it is a process of continual improvement. Booz Allen hopes this assessment contributes to VA's goal of continually improving preparedness so that the VA can more effectively respond to events that threaten the country.



## 1. INTRODUCTION

### 1.1 Background

The September 11 attacks, the anthrax letters of 2001, and the SARS epidemic of 2003 elevated emergency preparedness on the national agenda. With the recognition that acts of terrorism and natural disasters can both result in mass casualties, emergency preparedness has evolved into “a comprehensive all-hazards approach to enhance the ability of the United States to manage domestic incidents.”<sup>6</sup>

Emphasis has been placed on the inter-agency cooperation between medical centers and public health systems that is essential for effective bioterrorism preparedness<sup>7</sup>. During the bioterrorism hearings before the Subcommittee on Oversight and Investigations House Committee on Energy and Commerce in 2001, Dennis O’Leary, president of the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO), suggested the following priorities for preparedness:

- Train health care workers to become familiar with pathogens that may be used in bioterrorism, their symptoms, and their routes of transmission, and to be alert to the possibility of their use
- Create a single, integrated system of response to effectively address a full range of diseases and disasters, whether of terrorist or natural origin
- Analyze community and state preparedness, including available medical facilities and delivery sites
- Establish a medical/public health surveillance system to promptly detect naturally occurring epidemics and terrorist activity
- Evaluate and resolve issues related to national supplies (for example, vaccines) and how they are distributed; and reevaluate national funding policies, which have progressively reduced the ability of the nation’s medical system to respond to increased demand (for example, decreased hospital beds and closed emergency rooms).

The Department of Veterans Affairs (VA) has responded to the challenge of homeland security by establishing an Office of Operations and Readiness within the Office of Policy, Planning, and Preparedness and by collaborating with the Department of Health and Human Services (HHS) and other federal agencies in emergency preparedness planning efforts. During a public health emergency, “VA will provide critical assistance that includes designating and deploying available medical, surgical, mental health and other health service support assets. Homeland Security Presidential Directive 10 designates HHS as the lead agency for mass casualty care and directs VA to support HHS in carrying out this mandate.”<sup>8</sup>

<sup>6</sup> U.S. Department of Homeland Security. National Response Plan (NRP) Fact Sheet, January 6, 2005.

<sup>7</sup> Mobilizing America’s Health Care Reservoir, Joint Commission Perspectives, December 2001. Accessed at <http://www.jcrinc.com/docViewer.aspx>.

<sup>8</sup> Simonson, Stewart. *Safeguarding the Nation: HHS and VA Emergency Preparedness Collaborations*. Testimony before the U.S. House of Representatives Committee on Veterans Affairs by Assistant Secretary of Public Health Emergency Preparedness, U.S. DHSS. August 26, 2004.



Since the passage of The Department of Veterans Affairs Emergency Preparedness Act of 2002, the VA has produced the *Emergency Management Program Guidebook* and has supported relief efforts in numerous natural disasters. An example of VA's preparedness and response capability was demonstrated in 2004 when Hurricanes Charley, Frances, Ivan, and Jeanne pounded the state of Florida. More than 400 VA employees from across the country deployed to the devastated communities. This collective effort constituted the largest single deployment of VA volunteers during a national disaster. VA has the capacity to act as a unified healthcare system and effectively respond to HHS' and Federal Emergency Management Agency's (FEMA) calls for support.<sup>9</sup>

The purpose of this assessment is to evaluate the level of preparedness of VA medical facilities and Veterans Integrated Service Networks (VISN). It is not a critique of individual VA Medical Centers (VAMC) or VISNs, but rather an attempt to establish a baseline for tracking the level of preparedness and to identify potential improvement opportunities. This assessment responds, in part, to the requirements of *Supplemental Appropriations for Evaluation of VA's Emergency Preparedness* (P.L. 107-38) and supports the fulfillment of the requirements of *Government Performance and Results Act of 1993* (P.L. 103-62).

The VA Office of Policy, Planning, and Preparedness contracted with Booz Allen Hamilton to evaluate VAMCs and other VA health facilities with regard to emergency preparedness for "all hazards." Within the all hazards approach, a special emphasis will be placed on Weapons of Mass Destruction (WMD) and Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) attacks. Key areas considered for this evaluation include: planning for emergent expansion of hospital beds and health care personnel; development of additional isolation and decontamination capacity; development of surveillance and communication systems; establishment of hospital based pharmaceutical caches, personal protective equipment, education, and training activities; terrorism preparedness exercises; and provision of mental health and other services. This report is the synthesis of best estimates from 143 VAMCs and 21 VISNs as obtained through interviews and a custom built automated survey tool.

## 1.2 Objectives

The principle objectives of this study were to:

- Provide a broad independent assessment of the current level of VAMC and VISN preparedness
- Provide a current snapshot of selected strengths and vulnerabilities
- Develop a baseline against which to measure future progress
- Create a preparedness assessment screening tool and methodology for current and future use, in combination with other assessment methodologies, to provide a more robust longitudinal approach to preparedness assessment.

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<sup>9</sup> Bristol, Matt. 2004: *Year of the Hurricane*. VAnguard, September/October 2004: 14-15.



## 2. PROJECT METHODOLOGY

### 2.1 Survey Design

The process of survey design included detailed discussion with the VA Working Group regarding objectives, preparedness categories of interest, and specific question construction. The Working Group included representatives from both the VA staff offices and the Veterans Health Administration (VHA), with backgrounds in emergency preparedness or responsibilities directly relevant to emergency preparedness (Exhibit 3). In addition, Booz Allen conducted a thorough review of documents and directives that describe the specific preparedness requirements for hospitals within the VA system (Appendix 1: VA Reference Documents).

Exhibit 2 – Project Phases I and II

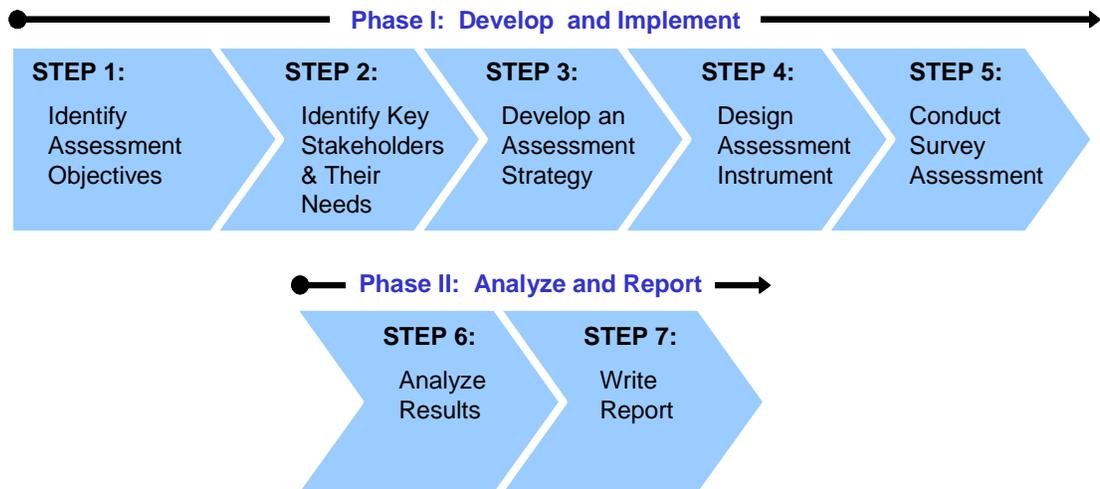


Exhibit 3 – VA Working Group Members

Name	Title/Office Represented
Peter Brewster	Training/Exercise Specialist, Emergency Management Strategic Healthcare Group (EMSHG), VHA
Arnie Bierenbaum	Director Safety and Technical Services VHA Operations and Management
Maryann Bruno	Health Systems Specialist, Network Office, VHA
Clarisa Rodrigues Coelho	VA Project Manager, Program and Management Analyst, VA Office of Policy, Planning, and Preparedness
Marcelle Habibion, Ed.D.	Program and Management Analyst, VA Office of Policy, Planning, and Preparedness
Lucretia McClenney	Special Assistant to the Assistant Secretary, VA Office of Policy, Planning, and Preparedness
Reuben Pinkson	Area Emergency Manager, EMSHG, VHA
Julie Schroeder	Program Analyst, VA Office of Policy, Planning, and Preparedness
R. Tom Sizemore, III, M.D.	Acting Director, Office of Operations and Readiness, VA Office of Policy, Planning, and Preparedness
Ray Wilburn	Acting Deputy Assistant Secretary for VA Planning and Evaluation



The VA Working Group also provided Booz Allen with a list of key programmatic stakeholders to interview. A semi-structured interview was conducted with 11 stakeholders from VAMCs, VISNs, and VA Central Office to identify their priorities and perspectives regarding key areas to explore in assessing preparedness. (See Appendix 2: Summary of VA Stakeholder Interviews.)

There was broad agreement among Working Group members that survey design should be based, as much as possible, on a non-federal hospital preparedness assessment survey that Booz Allen previously developed for the Agency for Healthcare Research and Quality (AHRQ) and the Health Resources Services Administration (HRSA). This non-federal CBRNE survey tool was developed in collaboration with an expert panel over a 20-month period and administered to 8 state public health departments with completed questionnaires returned from 111 hospitals in a pilot phase (See Appendix 3: Expert Panel for Department of Health and Human Services Survey). Balancing the need for a tool that allows comparability to non-federal hospitals with the need for a tool that captures the unique characteristics, needs and mission of the VA, the Working Group and Booz Allen modified some questions, deleted others, preserved some in their original format, and created new questions as appropriate. Similarly, the group reviewed a survey conducted by the VA in 2002, "Assessment of VA Manpower and Resource Preparedness to Meet Requirements During an Emergency," as a potential source of survey questions. The final product was a VAMC survey of 45 preparedness questions and 9 demographic questions. An additional 17 preparedness questions and 1 demographic question were crafted for the VISN survey. Of the 45 VAMC questions, 26 were preserved in the precise format of the AHRQ/HRSA survey to allow some level of comparability with the private sector. The resulting questions were then sorted among the categories listed below to provide a high level assessment in the domains of interest. (See Appendix 4: VA All Hazards Preparedness Survey and Responses.) These nine preparedness categories were drawn, in large part, from the National Fire Protection Agency (NFPA).

- Program Committee, Coordinator, and Administration
- Planning
- Direction, Control, and Coordination
- Communication and Warning
- Crisis Communications and Public Information
- Resource Management
- Operations, Procedures, and Mutual Aid
- Logistics and Facilities
- Training, Exercises, Evaluations, and Corrective Actions.

Based on experience gleaned from creating the AHRQ/HRSA survey, most questions were constructed to capture a continuum of preparedness activity as described in the following exhibits.



Exhibit 4 – Survey Responses for Questions Using a 5 Point Scale

Survey Responses	Score
No, and (the activity) is not planned within the next 6 months.	1
No, but (the activity) is planned within the next 6 months.	2
(The activity) is currently under development.	3
Yes, but (there is some limitation to the activity).	4
Yes, and (the activity includes).	5
Other	score is assigned based on narrative that may be included in response to this category

Exhibit 5 – Survey Responses for Questions Using a 3 Point Scale

Survey Responses	Score
No, and (the activity) is not planned within the next 6 months.	1
No, but (the activity) is planned within the next 6 months.	2
Yes, and (the activity includes).	3

This scale allows a score to be created along a structured continuum of preparedness, with 1 corresponding to the lowest level of preparedness and 5 to the highest. In the five point scale, respondents were given the option of selecting “other” and providing a narrative description, if they had difficulty assigning a level of activity based on the responses provided. In assigning values to these “other” responses, Booz Allen experts reviewed all narrative responses and assigned values (1 to 5) that mostly closely aligned with the “other” activity. When no narrative description was provided, Booz Allen assumed some level of preparation and gave a score equivalent to “in progress” (that is, score of 3 on a 5 point scale). Scores were used in a variety of ways (for example, to provide an average score for preparedness regarding a specific question or category of questions, to provide a score for an individual VAMC or VISN, and to provide a score for a group of VAMCs or VISNs facing unique threats).

## 2.2 Assessment Parameters

The preparedness components of VAMC and VISN surveys were limited to 45 and 17 questions respectively. However, to cull the most important issues for senior managers to track over time, 24 questions were chosen to be highlighted in longitudinal reporting processes. A subset of 11 questions was selected to provide key parameters appropriate for Executive Reporting. Each parameter includes a reporting measure and a planning measure. The reporting measures might be used for public reporting purposes (to Congress, the GAO, the Inspector General, etc.). These measures demonstrate the percentage of medical centers that comply with at least a minimum degree of preparedness. The planning measures include only the percentage of medical centers that meet the highest degree of preparedness. Planning measures provide a potential planning benchmark for those institutions that exceed the minimum threshold (the most basic benchmark) but have not yet reached the level of compliance achieved by the highest scoring institutions. The assessment parameters and the metrics generated in this assessment



can be found in Appendix 5: Survey Assessment Parameters and Results. Additionally, further discussion of these parameters, and the readiness of VAMCs and VISNs to meet these parameters, is also included in Section 6: Findings and Discussion. An example of a training assessment parameter is found in Exhibit 6 below.

Exhibit 6 – Example of Training Assessment Parameter

Survey Question #	Survey Question	Measurement Methodology
#40	Percentage of medical centers that have provided awareness level training to staff on their roles in the EOP	Reporting measure: <i>Yes, but</i> and <i>Yes, and</i> survey responses= <b>81% (116/143)</b> Planning measure: <i>Yes, and</i> survey responses= <b>59% (85/143)</b>
#41	Percentage of medical centers that provide all hazards events training to emergency clinicians, including physicians and nurses	Reporting measure: <i>Yes, but</i> and <i>Yes, and</i> survey responses= <b>37% (53/143)</b> Planning measure: <i>Yes, and</i> survey responses= <b>27% (38/143)</b>

### 2.3 Survey Administration

All communications relevant to the survey, including overall goals, method, and time of administration, as well as endorsement by the Central Office, were distributed from the VHA Office of Operations and Management to VISN directors. VISN directors distributed this information to the medical centers. (The communication history is outlined in Appendix 6: Communication History.) Booz Allen hosted both the VAMC and VISN surveys on a server that could be accessed via the Internet. The survey administration period ran from November 1 to December 6, 2004. Information regarding the electronic survey programming is included in Appendix 7: Survey Installation and Configuration Guide.



### 3. DATA ANALYSIS

#### 3.1 Analysis Plan

Exhibit 7 below identifies the analysis techniques employed, the questions to which each technique was applied, and the expected output of the analysis. The analytic techniques include frequency distributions, cross tabulations, significance testing where appropriate, factor analysis, logistic regression, and geographic and population threat analyses.

Exhibit 7 – Analysis Techniques

Analysis	Questions	Output
<b>Frequency distribution by VAMC</b>	All	Number and percentage of respondents in each response category. Provides a baseline description of the state of preparedness for each question
<b>Frequency distribution by VISN</b>	All	Number and percentage of respondents in each response category by VISN
<b>Measures of central tendency (mean, median, mode, standard deviation)</b>	Numeric fill-in responses to questions, such as the number of authorized beds or staffed beds	“Average” response for each question.  Mean response and standard deviation used to create categories for further analysis
<b>Basic cross tabulations</b>	Preparedness questions: all. Demographic questions: staffed beds, type of facility, affiliation with teaching hospital, HRSA bioterrorism program participation, other funding, VA decontamination training, population density descriptor	Differences in preparedness levels between demographic groups
<b>Geographic</b>	Performed against major categories <sup>10</sup> of questions on the basis of risk from terrorism or natural disaster	Maps identifying relative preparedness of VISNs and major urban areas
<b>Factor Analysis</b>	All	Associations and correlations between responses to individual questions and overall survey performance
<b>Regression Analysis</b>	Performed against key indicators, Assessment Parameters, and other selected survey questions	Predictive potential for preparedness at or above the 60 <sup>th</sup> percentile.  Aggregate contribution of factors to preparedness

##### 3.1.1 Descriptive Analysis

After the survey administration period closed and the respondent data were examined, duplicate entries were noted. When respondents submitted two surveys, the most recent or complete

<sup>10</sup> Survey questions were identified and grouped according to topics of major interest. This analysis is referenced in each map presented throughout the report.



survey was used for analysis and the other submission was deleted. A total of nine VAMC and four VISN duplicate submissions were deleted.

Booz Allen performed descriptive analysis, the results of which are provided in more detail in the Findings Section of this document. Descriptive analysis provides an insight into the percentage of VAMCs and VISNs that have achieved a specified level of preparedness along a structured continuum of preparedness (for example, the percent of VAMCs that have decontamination showers). All percentages were rounded to the nearest whole number.

### 3.1.2 Preparedness Scoring

Preparedness scores were generated, as described in Section 2.1 above. These scores were then used to assess overall preparedness in selected categories of readiness and to assess preparedness at individual VAMCs and VISNs. Profiles of each VAMC and VISN were created. Further documentation of this scoring methodology, including how “other” responses were scored, is found in Appendix 8: Scoring of Other Responses.

Preparedness scores were also used to create maps to visualize the geographic distribution of scores and patterns of preparedness. These preparedness scores were also geographically mapped in relation to natural disasters (floods, tornadoes, earthquakes, and hurricanes) and terrorist threats (population based metrics of vulnerability as used by the CDC’s Cities Readiness Initiative).<sup>11</sup>

### 3.1.3 Key Variable Associations

Data were further analyzed using factor analysis and logistic regression models to demonstrate associations between key variables and levels of preparedness. Since data structures were ordinal, nominal, or binary, statistical evaluations to establish factor association were conducted under non-parametric assumptions. Non-parametric data analysis does not require that independent factors or outcomes be normally distributed, linearly related, or of equal variances. Data were analyzed using the Commercial Off-The-Shelf (COTS) software, SPSS®. Each of the independent factor groups contained individual variables that were recoded as binary.

Additionally, two binary outcome variables were derived by partitioning overall VAMC emergency preparedness questionnaire response scores at the 20<sup>th</sup> and 60<sup>th</sup> percentiles. The nominal factors hypothesized to be drivers or influencers of each outcome group were tested individually for association by using an Odds Ratio (OR) statistic. The OR was used to express the probabilities of strength and direction in associations between key variables and preparedness. Factors were also tested for independence to identify potential interactions or confounding by using chi-square for independence and Fishers exact testing for tables with small cell sizes.

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<sup>11</sup> Department of Health and Human Services, Centers for Disease Control and Prevention, Cities Readiness Initiative Fact Sheet, June 14, 2004, Pilot Program including 20 cities and the National Capital Region (District of Columbia).



To understand the predictive potential of independent factors, logistic regression was run on the 11 preparedness assessment parameters for executive use and other selected variables. Logistic regression is a robust predictive modeling approach that is well suited to exploring the probabilities that observed cases will be correctly assigned to a particular binary outcome group. The outcome used was the binary overall preparedness scores below and on or above the 60<sup>th</sup> percentile. Logistic regression leverages the knowledge and understanding of factors hypothesized to be drivers of targeted outcomes. Acuity of this type analysis is enhanced after factors have been identified through association tests such as factor analysis. This type of regression is optimized when sample sizes are sufficiently large and repeated rounds of data are used to validate the models.

Models are developed by several methods that vary in how prospective predictive factors are entered. The two approaches used in this particular analysis were forward entry and backward elimination. Forward entry adds one variable at a time until the addition of more variables does not improve model accuracy. Backward elimination begins with all variables in the model removed one at a time until model accuracy significantly degrades.

## **3.2 Method and Data Limitations**

### **3.2.1 Survey Method**

These surveys (VAMC and VISN versions) were designed as a descriptive baseline assessment of VA preparedness in the context of all hazards events. As such, they were administered at a specific point in time (December 2004) and represent a cross section of VA preparedness at the end of 2004. Announcements concerning the administration period of the survey instruments were handled through the VHA Office of Operations and Management. One individual in each VAMC or VISN served as the principal responder. This individual was responsible for soliciting input from the most appropriate sources within that VAMC or VISN. Data were thus “self reported” by members of the VA community at the VAMC or VISN level. Self reported data may be subject to both over and under reporting.

### **3.2.2 Instrument Limitations**

The survey was administered electronically. The response rate per question was high in both surveys. Responses to only 16 of 45 preparedness questions on the VAMC survey contained missing data. The highest missing rate was 4 respondents (3 percent of the population). One hundred percent of the VISNs responded to all 17 preparedness questions on the VISN survey.

In one VAMC survey, there was a section of questions that had no response. The reason for the missing data is not known, but technical problems, a skip methodology, or user confusion may have been contributing factors.

When the “other” responses were analyzed, it became clear that some responders used this category as a means to clarify one of the scoring categories rather than to communicate a response that was truly “other” than the options given. Of the 45 preparedness questions on the



VAMC survey, 41 of these had “other” responses. One question generated “other” responses from 18 VAMCs (13 percent of the population), but most questions had “other” response rates under 5 percent. Sixteen of 17 preparedness questions on the VISN survey received “other” responses. The highest “other” response rate for the VISN survey was 7 respondents (33 percent of the population). The “other” response rate was consistently higher from the VISN questions than from the VAMC questions, perhaps suggesting that the questions were less well suited to the activities of the VISNs.

### 3.2.3 Data Limitations

The design of the preparedness continuum contained in the question responses yields descriptive, ordinal level data. These types of data are not as robust as interval or ratio data, and are not suited to many types of sophisticated inferential statistical analyses.

The most positive outcome of these surveys would be high preparedness scores in all VAMCs and VISNs. Thus, the most desirable programmatic outcome is in tension with statistical objectives of normal distribution. For the majority of questions, responses are skewed toward the higher end of the scale (that is, more prepared). For that reason, we have selected statistical tests suitable for ordinal categorical data, and created groups through factor analysis that indicate the greatest (greater than the 60<sup>th</sup> percentile) and least (less than the 20<sup>th</sup> percentile) state of preparedness, to better understand the most important activities that contribute to preparedness.



## 4. RESPONSE RATE

### 4.1 Response Rates

A total of 143 medical centers responded to the all hazards preparedness survey. Though the total number of VA medical facilities varies in published documents, the VA Working Group considered 143 responses to represent a 100 percent response rate. It was noted that a number of facilities are combined, as part of a single administrative entity, under a single director. These administrative entities (which included multiple facilities) provided single responses. One medical center did not complete the entire survey; this incomplete survey omitted the demographic portion but included programmatic responses, so this incomplete response was included in this report's total responses. All 21 VISNs completed the VISN survey, which represents 100 percent of that population. The list of responding VAMCs and VISNs is found in Appendix 9.

## 5. DEMOGRAPHICS

### 5.1 General Demographics

The medical center survey included 9 demographic questions (and 45 preparedness questions.) The VISN survey included 1 demographic question (and 17 preparedness questions).

Exhibit 8 – Issues Addressed by Demographic Questions

Demographic Questions	Sub Question
Medical Center Bed Size (VAMC)	Authorized Beds Staffed Beds
Types of Services Offered (VAMC)	General Medical General Surgery Psychiatric Long Term Care/Skilled Nursing Facility Rehabilitation Spinal Cord Injury Blind Rehabilitation
Designation of Primary Receiving Center or Secondary Receiving Center (VAMC)	
Federal Coordinating Center (FCC) for the National Disaster Management System (NDMS) (VAMC)	
Teaching Affiliation (VAMC)	
Certified Trauma Center (VAMC)	Level of Certification
Involvement in Health Resources and Services Administration (HRSA) National Bioterrorism Hospital Preparedness Program (VAMC)	
Funding Sources Other Than VA (Both a VAMC and VISN question)	

Sixty-four medical centers (45 percent) indicated that they are Primary Receiving Centers (PRC). PRCs are VAMCs designated under the VA/DoD Contingency Plan to receive military casualties in the event of a war or other national emergency. Thirty-five percent of VAMCs are Federal



Coordinating Centers for the National Disaster Management System (NDMS). Federal Coordinating Centers are defined as VAMCs or military hospitals having oversight of the NDMS within a specific metropolitan area; this responsibility includes executing memorandums of understanding with local private sector hospitals participating in NDMS, developing patient reception and management plans, and reporting available NDMS bed capacity to the Global Patient Movement Requirements Center.

Only 8 percent of the medical centers are trauma certified by the American College of Surgeons, and none are Level I trauma centers. Seventy-seven percent of responding sites are associated with a teaching medical center. Sixty-nine of the surveyed facilities have 200 beds or more, and 74 have less than 200 beds.

Exhibit 9 – Categories (VAMC n=143)

	# VAMC
0-5 beds	5
6-99 beds	29
100-199 beds	40
200-299 beds	30
300-499 beds	23
500+ beds	16
<b>TOTAL 143</b>	

Fifty-five percent of the medical centers participate in the HRSA National Bioterrorism Hospital Preparedness Program. Thirty-seven percent of the responding medical centers (53 centers) and four VISNs (19 percent) receive funds from sources other than VA. The most common source of these funds is HRSA. The distribution of other sources of funding for both VAMCs and VISNs is indicated in Exhibit 10 below.

Exhibit 10 – Distribution of Other Funding Sources (VAMC n= 53, VISN n= 17)

Other Sources of Funding	% VAMCs	% VISNs
Health Resources and Service Administration (HRSA)	82%	100%
Metropolitan Medical Response System (MMRS)	23%	67%
Department of Defense (DoD)	13%	33%
Department of Homeland Security (DHS)	9%	33%
Centers for Disease Control (CDC)	0%	33%

## 5.2 Risk Associated Demographics – Geographic and Population Characteristics

Some demographic characteristics are associated with specific risks. For instance, certain geographic regions are at greater risk for natural disasters, including earthquakes, hurricanes, tornadoes, and floods. Other areas are thought to be at higher risk of terrorist attack because they are population centers.



### 5.2.1 Geographic Characteristics

Booz Allen determined which VISNs were considered at risk for natural disasters based on a review of incidence data. These data were obtained from historical disaster maps from sources that included FEMA and the National Oceanic and Atmospheric Administration (NOAA). Exhibit 11 below includes those VISNs found to be most often at serious and repeated risk for natural disasters. Booz Allen calculated preparedness scores for the VISNs and VAMCs in each of these areas and displayed these findings on maps (see Section 6.1.2.1: Geographic Risk).

Exhibit 11 – VISNs at Risk

Disaster	Respondents
Earthquake	VISNs 20, 21, 22
Flood	VISNs 8, 16, 17, 18, 21, 22
Hurricane	VISNs 6, 7, 8, 16, 17
Tornado	VISNs 8, 9, 10, 15, 16, 17, 23

### 5.2.2 Population Characteristics

The CDC's City Readiness Pilot Program has identified 21 high risk urban centers based on population and strategic significance<sup>12</sup>. VAMCs in or near each of these cities were identified based on Metropolitan Statistical Areas. Booz Allen calculated preparedness scores for each of the VAMCs in or near these cities and displayed these findings on maps (see Section 6.1.2.2: Population Based Risk). The 21 cities are listed in Exhibit 12 below.

Exhibit 12 – CDC's City Readiness Pilot Program Cities

Atlanta, GA	Houston, TX	Phoenix, AZ
Boston, MA	Las Vegas, NV	Pittsburgh, PA
Chicago, IL	Los Angeles, CA	St. Louis, MO
Cleveland, OH	Miami, FL	San Diego, CA
Dallas, TX	Minneapolis, MN	San Francisco, CA
Denver, CO	New York, NY	Seattle, WA
Detroit, MI	Philadelphia, PA	District of Columbia

<sup>12</sup> Obtained from <http://www.bt.cdc.gov/cr/facts.asp>.



## 6. FINDINGS AND DISCUSSION

This section presents the major findings of this survey; however, it is important to place these findings in context. These results represent a snapshot of preparedness at a single point in time, specifically in November and December 2004. As indicated in the survey, many of the VAMCs and VISNs had short-term plans to improve preparedness and these efforts will have progressed since the time of the survey administration. Furthermore, a single survey cannot, in isolation, fully assess the preparedness of a particular VAMC or VISN; the survey is merely a screening tool. The findings presented here suggest areas which may warrant further investigation and help to prioritize the process of further due diligence regarding specific locations or specific categories of preparedness. Since preparedness is not a definable end state but rather a process of continual improvement, this survey tool will be more useful as it is applied over time to track progress and set goals. This first survey will provide a baseline for future comparisons. With experience, the survey tool itself will improve as modifications and refinements are made to it.

Though there were only 45 primary VAMC questions and 17 primary VISN questions, many questions had sub-questions which were posed to respondents, depending on their answers to the primary questions. A total of 224 VAMC sub-questions and 87 VISN sub-questions were possible. It would obscure the more significant findings to present and discuss all responses in this section. As noted above, only the most significant findings are presented. In most cases, this includes responses to the 24 questions identified as assessment parameters and considered by the VA Working Group and Booz Allen to be the most significant issues to explore. Responses to other questions are included if the responses suggest possible vulnerabilities or opportunities for improvement. Selected secondary question responses are also presented if the responses have particular significance. For a complete listing of survey questions and responses, see Appendix 4: VA All Hazards Preparedness Survey and Responses.

The Findings Section is divided into two parts:

- **Demographic Findings**
  - General Demographics
  - Risk Associated Demographics
    - Geographic Risk of Hurricanes, Floods, Tornadoes, and Earthquakes
    - Population Based Risk of Attack (CDC's City Readiness Pilot Program)
- **Findings in 10 Categories of Preparedness**
  1. Program Committee, Coordinator, and Administration
  2. Planning
  3. Direction, Control, and Coordination
  4. Communication and Warning
  5. Crisis Communication and Public Information
  6. Resource Management
  7. Operations, Procedures, and Mutual Aid



8. Logistics and Facilities
9. Training, Exercises, Evaluations, and Corrective Actions
10. Decontamination

## **6.1 Demographic Findings**

### **6.1.1 General Demographic Findings**

As noted above, 45 percent of VAMCs (64 centers) indicated they are Primary Receiving Centers (PRC). Factor analysis demonstrated that being a PRC was strongly associated with a higher overall preparedness score (OR= 2.48). Federal Coordinating Centers are also associated with higher preparedness scores (OR = 2.68). However, trauma certification was not associated with higher preparedness scores. This is not surprising since so few VAMCs are trauma certified and none are Level 1 Centers. VAMCs with 200 or more authorized beds were more likely to have higher preparedness scores (OR = 2.31). A teaching medical center affiliation is associated with a significantly higher preparedness score (OR= 4.92).

### **6.1.2 Risk Associated Demographics**

#### **6.1.2.1 Geographic Risk**

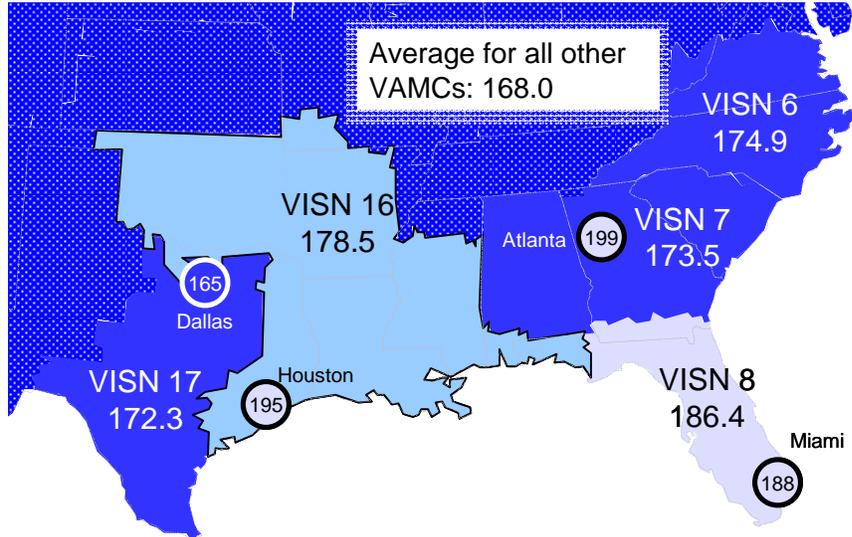
Included below are four maps analyzing total preparedness by VISN for those areas most at risk of natural disasters such as earthquakes, tornadoes, hurricanes, and flooding (Exhibits 13 to 16).

VISN scores appearing on these maps are derived from the average of VAMC survey responses for the appropriate facilities. Scores from facilities not considered at risk for any particular disaster were combined for comparison to the selected data set. For example, any VISN not at risk for a hurricane is compared with those VISNs at risk for a hurricane.



Exhibit 13 – Geographic Risk: Hurricanes

VISNs and VAMCs on the Gulf and southern Atlantic coast are most at risk for hurricanes, and reported higher total preparedness levels than VAMCs in VISNs not at risk for hurricanes. The Atlanta, Houston, and Miami VAMCs ranked in the top quintile of total preparedness scores. (The average score for VAMCs in other VISNs was 168.)

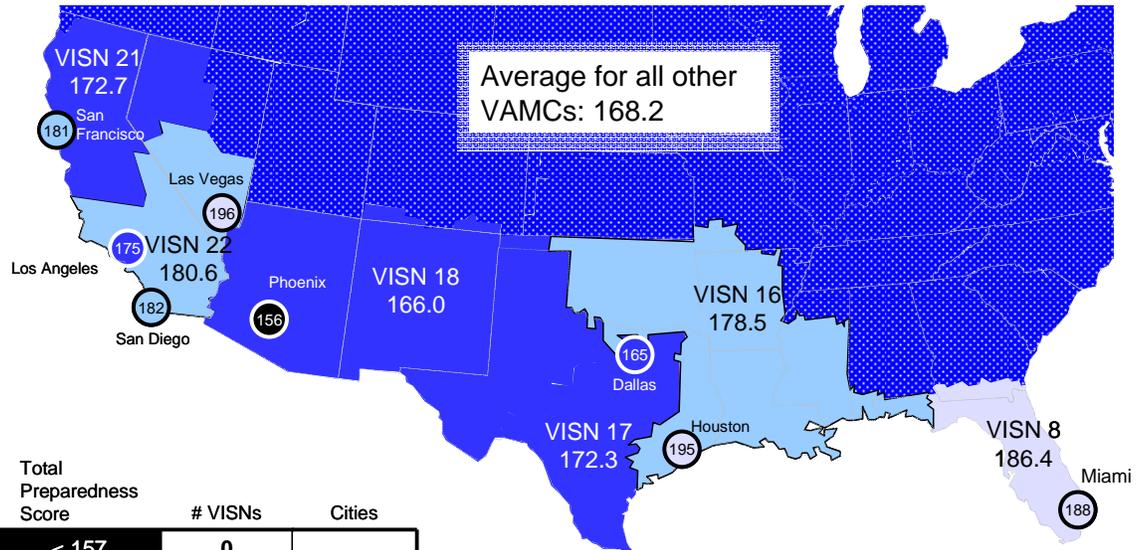


Total Preparedness Score	# VISNs	Cities
< 157	0	-
157-164	0	-
165-175	3	1
176-184	2	-
185+	1	3

○ Those cities participating in CDC's City Readiness Pilot Program

Score on all Questions  
Max Score 205

Exhibit 14 – Geographic Risk: Floods



Total Preparedness Score	# VISNs	Cities
< 157	0	-
157-164	0	-
165-175	3	2
176-184	2	2
185+	1	3

○ Those cities participating in CDC's City Readiness Pilot Program

Score on all Questions  
Max Score 205

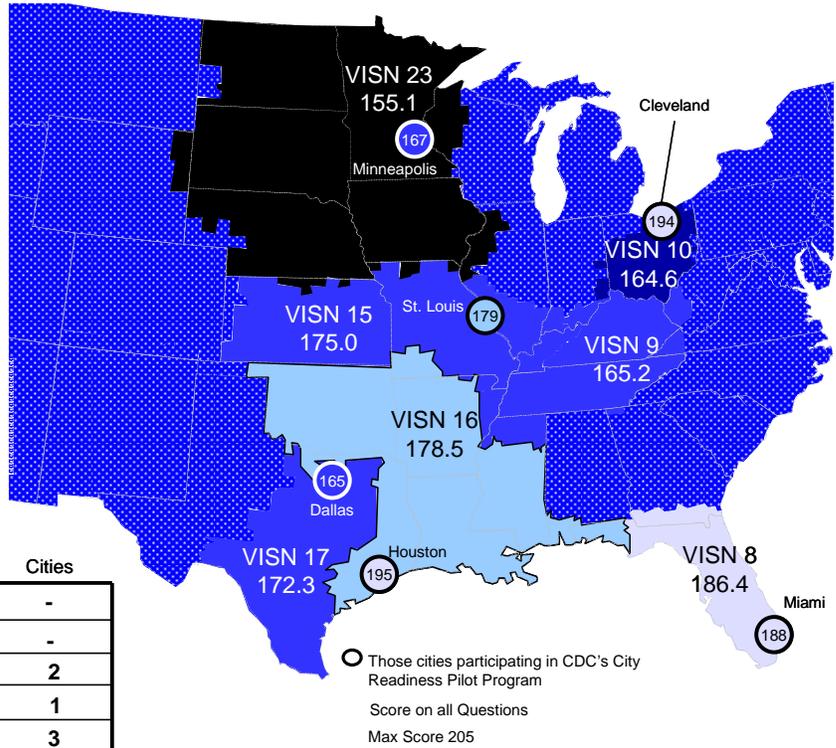
VISNs at risk of flooding include those in the southern portion of the United States. All but VISN 18 had VAMCs that performed better than VAMCs not at risk for flooding. (The average score for VAMCs in other VISNs was 168.2.)



Exhibit 15 – Geographic Risk: Tornadoes

Despite being in a tornado zone facilities in VISNs 9, 10, and 23 indicated total average preparedness below facilities not at risk for tornadoes. Those facilities scoring higher, ie facilities in VISNs 8, 16, and 17, were also in either a hurricane or flood zone or both. (The average score for VAMCs in other VISNs was 170.3).

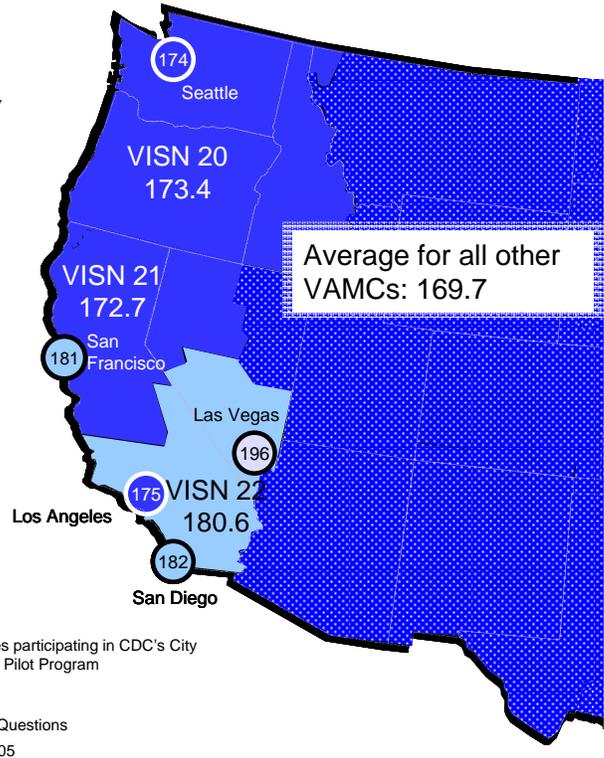
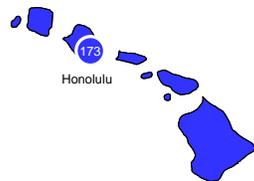
Average for all other VAMCs: 170.3



Total Preparedness Score	# VISNs	Cities
< 157	0	-
157-164	0	-
165-175	3	2
176-184	2	1
185+	1	3

Exhibit 16 – Geographic Risk: Earthquakes

VAMCs in VISNs at risk for seismic events reported average preparedness levels exceeding those not at risk for seismic events. Las Vegas scored particularly well in total preparedness. (The average score for VAMCs in other VISNs was 169.7.)



Total Preparedness Score	# VISNs	Cities
< 157	0	-
157-164	0	-
165-175	3	3
176-184	2	2
185+	1	1



As Exhibit 17 demonstrates below, a number of VISNs and VAMCs are in geographic areas at risk for two or even three types of natural disasters. This includes VISNs 8, 16, and 17 (hurricanes, floods, tornadoes) and VISN 21 and 22 (earthquakes and floods). In this group, VAMCs in VISNs 8, 16, and 21 scored particularly high.

Exhibit 17 – VISNs at Risk

Disaster	Respondents
Earthquake	VISNs 20, 21, 22
Flood	VISNs 8, 16, 17, 18, 21, 22
Hurricane	VISNs 6, 7, 8, 16, 17
Tornado	VISNs 8, 9, 10, 15, 16, 17, 23

#### 6.1.2.2 Population Based Risk

The CDC's City Readiness Pilot Program has identified 21 high risk urban centers based on population and strategic significance<sup>13</sup>. Readiness scores were calculated for VAMCs in or near each of these 21 cities based on Metropolitan Statistical Areas (MSA). When multiple VAMCs were located within an MSA, scores were averaged to create a single city score (Exhibit 18).

Exhibit 18 – Cities with Multiple VAMCs

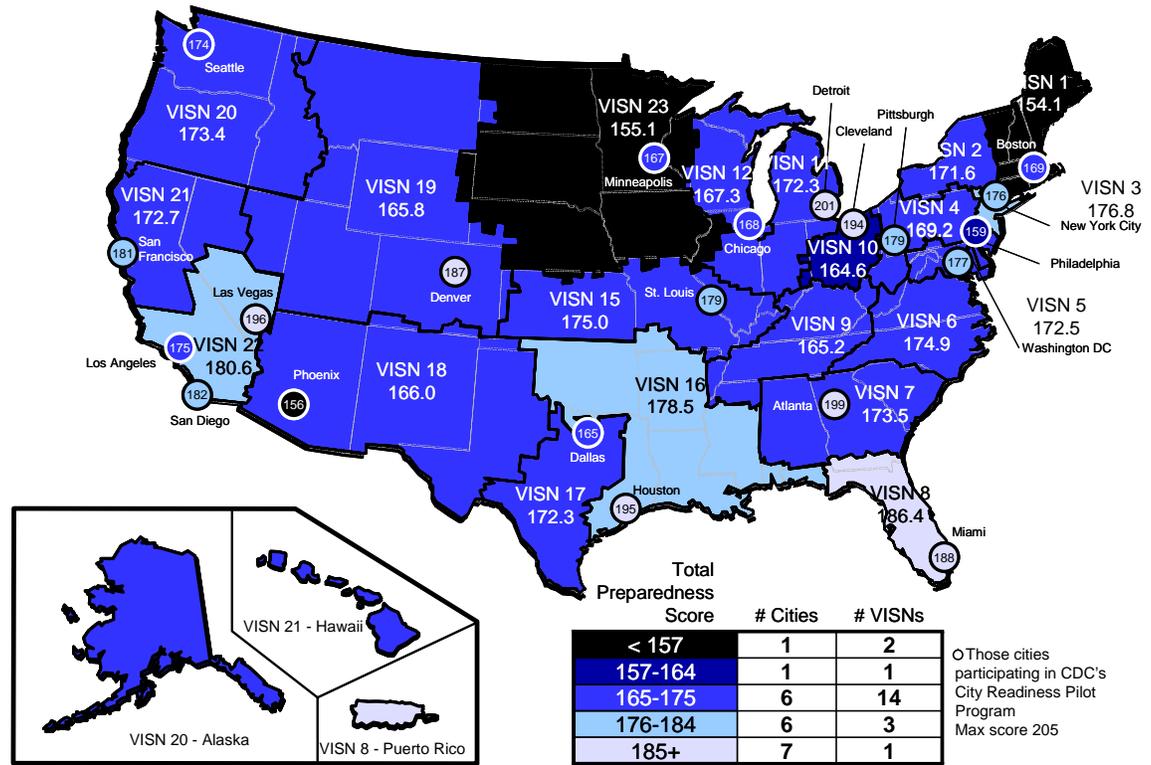
City	Respondents
New York City	(5) Northport VAMC, Bronx VAMC, New Jersey HCS, VA New York Harbor HCS, VA Hudson Valley Healthcare System
Los Angeles	(3) Greater Los Angeles Healthcare System, Long Beach VAMC, Loma Linda VAMC
Chicago	(3) Hines VAMC, Jesse Brown VAMC, North Chicago VAMC
Washington, DC	(2) Washington DC VAMC, Baltimore VAMC
Boston	(2) Edith Nourse Rogers Memorial Veterans Hospital, VA Boston Healthcare System
San Francisco	(1) San Francisco VAMC and Palo Alto VAMC combined

VISN Readiness Scores are derived from an average of all VAMC scores within that VISN.

<sup>13</sup> Obtained from <http://www.bt.cdc.gov/cr/facts.asp>.



Exhibit 19 – Total Preparedness by VISN and Population Center



With the exception of Phoenix, Dallas, Philadelphia, and Los Angeles, VAMCs in the major urban areas analyzed<sup>14</sup> met, or greatly exceeded, the preparedness of other VAMCs in their VISN.

This map shows relatively high levels of preparedness on the West Coast, in the Southeast, and on the Gulf Coast corresponding to regions at risk for hurricanes, floods, earthquakes, or some combination of those three natural events. VAMCs in VISN 8 reported the highest average score (186.4). VAMCs in VISNs 1, 10, and 23 reported the lowest average levels of preparedness.

Exhibit 20 – Map Scores

21 Cities: Rank Order by Score	Score	Individual VAMC in that City	Score of Individual VAMC	Corresponding VISN	Average Scores of Other VAMCs in that VISN
Detroit	201	Detroit	201	VISN 11	172.3
Atlanta	199	Atlanta	199	VISN 7	173.5
Las Vegas	196	Las Vegas	196	VISN 22	180.6
Houston	195	Houston	195	VISN 16	178.5
Cleveland	194	Cleveland	194	VISN 10	164.6
Miami	188	Miami	188	VISN 8	186.4
Denver	187	Denver	187	VISN 19	165.8

<sup>14</sup> The 21 cities participating in the CDC's City Readiness Pilot Program.



21 Cities: Rank Order by Score	Score	Individual VAMC in that City	Score of Individual VAMC	Corresponding VISN	Average Scores of Other VAMCs in that VISN
San Diego	182	San Diego	182	VISN 22	180.6
San Francisco	181	San Francisco	174	VISN 21	172.7
		Palo Alto	188		
Pittsburgh	179	Pittsburgh	179	VISN 4	169.2
St. Louis	179	St. Louis	179	VISN 15	175.0
District of Columbia	177	Washington DC	185	VISN 5	172.5
		Baltimore	169		
New York	176	Northport	188	VISN 3	176.8
		Bronx	173		
		New Jersey	179		
		NY Harbor	164		
		Hudson Valley	180		
Los Angeles	175	Greater LA	178	VISN 22	180.6
		Long Beach	198		
		Loma Linda	149		
Seattle	174	Seattle	174	VISN 20	173.4
Boston	169	Edith Nourse	130	VISN 1	154.1
		VA Boston	169		
Chicago	168	Hines VAMC	166	VISN 12	167.3
		Jesse Brown	160		
		North Chicago	179		
Minneapolis	167	Minneapolis	167	VISN 23	155.1
Dallas	165	Dallas	165	VISN 17	172.3
Philadelphia	159	Philadelphia	159	VISN 4	169.2
Phoenix	156	Phoenix	156	VISN 18	166.0

## 6.2 Findings in Specific Categories of Preparedness

There is a core set of capabilities that contributes significantly to the preparedness of health care organizations. These capabilities can be defined and classified in many ways. The categories were drawn, in large part, from the National Fire Protection Association. These categories were also influenced by the AHRQ/HRSA survey of civilian hospitals, thus representing a hybrid of the two approaches. As noted, alternative categories could be contemplated. For instance, surge capacity is a frequently cited key capability included in the larger category of resource management. Decontamination represents a special case because decontamination questions were distributed throughout the other nine categories, then consolidated in a separate decontamination category for analysis. This occurred because of the special focus VA has placed on decontamination capabilities. The 10 categories of preparedness include:



1. Program Committee, Coordinator, and Administration
2. Planning
3. Direction, Control, and Coordination
4. Communication and Warning
5. Crisis Communication and Public Information
6. Resource Management
7. Operations, Procedures, and Mutual Aid
8. Logistics and Facilities
9. Training, Exercises, Evaluations, and Corrective Actions
10. Decontamination.

### 6.2.1 Program Committee, Coordinator, and Administration

The Emergency Management Committee (EMC) focuses on coordinating internal policies and procedures for managing finance, personnel, and other resources. These activities require representation of key functional and clinical expertise in the committee membership.

Ninety-seven percent of the VAMCs (139 centers) indicated they have designated an EMC to oversee preparedness efforts. The four remaining VAMCs indicated plans for a designated EMC within the six months following completion of the survey (by June 2005). Twenty of the 21 VISNs reported having an active EMC, and the remaining VISN plans to organize one within six months of the survey.

Most of the 139 VAMC EMCs (more than 75 percent) have representation from safety professionals, emergency preparedness coordinators, security experts, facilities engineering, and clinical professionals. However, several of these same medical centers indicate less than a 60 percent representation from the following areas: radiation safety, mental health professionals, area emergency managers, and fiscal services. Only 66 percent of the medical center respondents (78 of 139) have EMC representation from acquisition/materials management personnel.

Although all hazards preparedness is an important VA initiative, the funding for the initiative trails the establishment of the program in almost half the VAMCs and VISNs. Only half the VAMCs (54 percent) reported a designated budget that supports all hazards preparedness. This may be reflective of the survey's timing. The survey administration period coincided with the beginning of

Survey Responses to Issues Addressed by Program Committee, Coordinator, and Administration Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
*1. Designated Emergency Management Committee	97%	139	<b>143</b>
2. Designated Team/Individual to Manage Decontamination	82%	117	<b>143</b>
*3. Does the budget support all hazards preparedness	54%	77	<b>143</b>
<b>VISN</b>			
*1. Designated Emergency Management Committee	95%	20	<b>21</b>
*2. Does the budget support all hazards preparedness	52%	11	<b>20</b>
* Indicates assessment parameter. ** High scores indicate YES responses (choices 4 or 5).			



the VA fiscal year, so complete budget information may not have been available to respondents. Results could reflect the fact that many sites do not have line item tracking of expenditures for all hazards preparedness.

**Summary Comments.** While VAMCs have been diligent in establishing EMCs, the composition of these committees is inconsistent and key roles are not always represented. Committee composition should be more standardized. Though a preparedness line item is not required, it would be useful to match goals with resources and to track budgets and expenditures over time. The size of a site’s budget should be consistent with the role of the facility, the local market served, and overall preparedness goals.

### 6.2.2 Planning

VAMCs and VISNs are required to have an Emergency Operations Plan (EOP). According to VA’s Emergency Management Guidebook, “The VISN Director is responsible for the development, coordination, implementation and evaluation of a Network-wide Emergency Management [Operations] Plan.” This plan includes:

- Response to hazards, threats, and events that adversely affect VHA facilities within the Network, including Outpatient Clinics
- External response plans [for example, VA-DoD Contingency Plans, National Disaster Medical System (NDMS), and the Federal Response Plan (FRP)].

Industry standards suggest that a plan should be reviewed annually, at minimum, in order to be considered current.<sup>15</sup>

Initially, 95 percent of the medical centers reported an EOP based on standard operating procedures for an all hazards event, and an additional 3 percent reported that an EOP is currently being drafted. After additional input by the Office of Operations and Management, the percentage of VAMCs with EOPs was amended to 100 percent. Seventy-eight percent of VAMCs indicated that they updated their EOP annually.

VISN responses closely mirrored those of medical centers. All VISNs indicated that they have an EOP, are currently drafting a plan, or plan to draft a plan within six months of the survey’s

Survey Responses to Issues Addressed by Planning Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
*4. Emergency Operations Plans with Standard Operating Procedures (SOP)	95%	136	<b>143</b>
*5. Representation in Regional Planning Group	95%	136	<b>143</b>
<b>VISN</b>			
*3. Emergency Operations Plans with SOPs	72%	15	<b>20</b>
*4. Representation in Regional Planning Group	90%	19	<b>21</b>

*\* Indicates assessment parameter.  
\*\* High scores indicate YES responses (choices 4 or 5).*

<sup>15</sup> Rubin, Jeffrey. Recurring Pitfalls in Hospital Preparedness and Response. January 2004. Accessed at <http://www.homelandsecurity.org/journal/Articles/displayarticle.asp?article=101>.



completion. However, of the 15 VISNs that indicated they have an EOP in place, 9 do not update the plans on an annual basis.

Two critical components of the EOP are the ability to expand inpatient bed capacity and the ability to increase outpatient treatment capacity. Of the 136 VAMCs that indicated they have an EOP, 80 percent (107 facilities) indicated their plans include a mechanism to increase their outpatient treatment capacity, while 78 percent (104 facilities) indicated their plans include a process to increase the number of inpatient beds. Since there are many critical all hazard components of the Emergency Plan, VAMC and VISN responses for each component are presented in Exhibit 21 below.

Exhibit 21 – Emergency Operations Plan Components (VAMC n= 136, VISN n=14)

	% VAMCs	% VISNs
Plan activation/staff notification	100%	100%
Incident Command System	99%	100%
Evacuation	99%	71%
Reporting to VISN/network office regarding EOP	99%	100%
Resources/situation status reporting	98%	100%
Roles in community event	98%	79%
Communication with community's EMS	98%	62%
Alternate sources of emergency supplies/utilities	97%	77%
Mental health services for patients	97%	85%
Controlling access to limit contamination	96%	77%
Utilizing medication caches	95%	
Patient/staff tracking	93%	54%
Isolate infectious/contaminated patients	93%	
Receipt/management of surge medications/supplies	93%	77%
Reducing number of inpatients	93%	
SOP for top two rated threats/hazards	87%	69%
Communication about infectious/ contaminated cases	87%	69%
Increasing outpatient treatment capacity	80%	
Increasing inpatient bed capacity	78%	
Decontamination activities	75%	
Access to age specific CBRNE guidelines	73%	86%
Handling CBRNE agents brought to facility	72%	54%
Patient care expansion areas	69%	
Storage expansion	65%	62%
Follow-up instructions	63%	
Cost recovery plan	59%	46%
Staff transport	54%	21%



More than half the 139 VAMCs have every component of the EOP, and 75 percent of the VAMCs have 75 percent of the 27 components in place. There is less consistency represented in the VISN EOPs.

The lowest ranking element for both VAMCs and VISNs is staff transport (54 percent and 21 percent respectively). During an event, the ability to bring staff resources to areas of need is a critical function. It is also important to have plans and procedures in place to handle CBRNE agents if victims present to a facility; only 72 percent of VAMCs and 54 percent of VISNs have this EOP component in place.

In addition to conducting their own planning, 95 percent of the medical centers participate in regional planning groups responsible for all hazards preparedness. Of those that participate in the planning groups, 76 percent reported at least quarterly interactions. Nineteen of the 21 VISNs (90 percent) participate in regional planning groups responsible for all hazards preparedness.

**Summary Comments.** Because planning is a relatively low cost and potentially high impact activity, compliance in this category should approach 100 percent. VAMCs score high with regard to the development of EOPs, with 100 percent compliance. A 2003 General Accounting Office (GAO) report suggested that in the broader hospital community, only 80 percent of hospitals had a written emergency response plan addressing bioterrorism.<sup>16</sup> VISNs had a lower rate of plan development (73 percent); however, all reported they would have a plan in place by June 2005. Among those VISNs with EOPs, there is variability regarding which elements of the plan are included (for example, only 3 of the 14 VISNs with plans included staff transport as part of their plans). Other notable omissions included handling of CBRNE agents, communications regarding infection control cases, and patient and staff tracking.

Among VAMCs and VISNs with EOPs, a significant number — 9 VISNs and 32 VAMCs — did not update the plan annually. The process of updating the plan keeps it relevant, and it provides an opportunity for key management staff to refresh their knowledge of, and new managers to become familiar with, the plan. (It is not essential to update the plan each year if it has been carefully reviewed and if no updates are warranted. In the future, this question may be rephrased to ask if the plan is reviewed each year, though this would not be consistent with the terminology currently used in the HHS survey of civilian hospitals.)

<sup>16</sup> U.S. General Accounting Office. *Hospital Preparedness: Most Urban Hospitals Have Emergency Plans but Lack Certain Capacities for Bioterrorism Response*, GAO-03-924. Accessed on August 13, 2004 at <http://www.gao.gov/new.items/d03924.pdf>.



### 6.2.3 Direction, Control and Coordination

Coordination between professionals across components of the emergency response system is critical to activate and sustain an emergency response. In an emergency, it is important that a facility be able to define its response roles within the local and regional response plan and be able to integrate with the existing command and control structure of the local or regional plan. It is also critical that staff clearly understand roles, responsibilities, and expectations as well as the organizational lines of communication.

Survey Responses to Issues Addressed by Direction, Control, and Coordination Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
*6. Formal Incident Command System	93%	133	<b>143</b>
*8. Resources to establish/operate Emergency Operations Center	97%	138	<b>143</b>
<b>VISN</b>			
*5. Formal Incident Command System	86%	18	<b>21</b>
6. Resources to establish/operate Emergency Operations Center	91%	19	<b>21</b>
<i>* Indicates assessment parameter.</i>			
<i>** High scores indicate YES responses (choices 4 or 5).</i>			

Included with direction, control, and coordination activities is the Incident Command System (ICS), which assigns responsibility based upon roles, not individuals. During an event, staff members may not report to their usual supervisor or work in their usual location, and they must be prepared to fill a role that is outside their routine. Therefore, training is essential to seamlessly operate the ICS.

Ninety-three percent of the medical centers (133 of 143) have a formal ICS, but only 41 percent of them have assigned and trained all personnel. The 10 remaining medical center respondents either have an ICS under development or plan to develop one within 6 months of the survey completion. Eighteen of the 21 VISNs have a formal ICS; the remaining 3 VISNs either have an ICS under development or plan to develop one within six months of the completion of the survey. Of the 18 VISNs that already have a formal ICS, 10 of these VISNs have trained all their formally assigned personnel. Among the 133 VAMCs and 18 VISNs with formal ICSs, 97 percent of the VAMCs and 75 percent of the VISNs routinely conduct drills and update their ICSs as needed after the drills.

The Emergency Operations Center (EOC) is a critical component of an ICS; the EOC provides the “nerve center” of the command system. The VA’s Emergency Management Guidebook defines an EOC as, “A fixed location that is activated in a disaster or emergency from which the overall command, control, communications and coordination are conducted.”

Resources to establish an EOC include space, staffing, communications capabilities, procedures, and equipment. Initially, 97 percent of medical centers and 81 percent of VISNs reported having the resources necessary to establish and operate an EOC. After further investigation by the VHA Office of Operations and Management, it was determined that all VAMCs and VISNs have identified the necessary resources, to establish and operate an EOC.



**Summary Comments.** It is encouraging that such a high percentage of VAMCs and VISNs have an ICS in place and that 100 percent expect to do so within six months. However, only 41 percent of VAMCs and 10 of the 18 VISNs with an ICS provide ICS training to formally assigned personnel. The need for greater penetration and assessment of training is a theme that recurs in several categories of evaluation.

#### 6.2.4 Communication and Warning

The communication questions in this category focus on communications between facilities and public health entities, and the ability to convey important public health information to staff.

Previous studies indicate that communication is often a weak link in preparedness and response.<sup>17,18</sup> In the 2003 TOPOFF 2 Exercise, sheer volume overwhelmed the phone and fax lines.<sup>19</sup>

Survey Responses to Issues Addressed by Communication and Warning Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
9. Connected to real time regional warning system	85%	122	<b>143</b>
10. Rapid receipt/posting of public health alerts	86%	122	<b>143</b>
11. EOP procedures for reporting CBRNE event	83%	119	<b>143</b>
12. Capability to report syndromic data from CBRNE event	83%	119	<b>143</b>
<b>VISN</b>			
7. Connected to real time regional warning system	62%	13	<b>21</b>

*\* Indicates assessment parameter.  
\*\* High scores indicate YES responses (choices 4 or 5).*

The communications system must be secure and ensure connectivity among healthcare facilities, state and local health departments, EMS, emergency management agencies, public safety agencies, neighboring jurisdictions, and federal public health officials during a terrorist incident or other public health emergency.<sup>20</sup>

Eighty-five percent of VAMCs (122 centers) and 62 percent of VISNs (13 networks) report being connected to real time warning systems. While the relatively lower level VISN connectivity may seem to be a more significant issue, health departments generally contact medical centers first. Medical centers then contact the VISN offices, which then notify the Central Office. Real time connectivity to departments of health is therefore most important at the VAMC level and 100 percent connectivity should be the objective. Real time connectivity to VISNs is desirable and serves as a redundant avenue of communication.

**Summary Comments.** A high percentage of VAMCs (85 percent) report real time connectivity to a public health warning system. Given the importance of VAMC/public health warning system

<sup>17</sup> Ibid.

<sup>18</sup> Krisberg, Kim. Public Health Preparedness Drills Reap Benefits, Concerns. *The Nation's Health* 33(9), 2003. Online. Available at: <http://www.medscape.com/viewarticle/463271> [Accessed August 20, 2004].

<sup>19</sup> Top Officials (TOPOFF) Exercise Series: TOPOFF 2 After Action Summary Report For Public Release, December 19, 2003. Accessed at [http://www.dhs.gov/interweb/assetlibrary/T2\\_Report\\_Final\\_Public.doc](http://www.dhs.gov/interweb/assetlibrary/T2_Report_Final_Public.doc).

<sup>20</sup> Agency for Healthcare Research and Quality. (April 2004). Regionalization of Bioterrorism Preparedness and Response Summary. Online. Available at <http://iis-db.stanford.edu/pubs/20539/bioregsum.pdf> [Accessed July 27, 2004].



connections, 100 percent connectivity should be the goal. VISNs should also strive for a greater level of connectivity to provide a layer of redundancy in communications. A relatively high percentage (more than 80 percent) of VAMCs were able to rapidly receive and post public health alerts and had EOP procedures for reporting a CBRNE event, although 100 percent compliance would be desirable.

### 6.2.5 Crisis Communication and Public Information

This section is closely related to the previous section: Communication and Warning. However this category focuses more on intrafacility communication and communication with other stakeholders in the community.

In planning for all hazards preparedness, effective communication must include internal and external stakeholders through multiple, and often changing, modalities.

Survey Responses to Issues Addressed by Crisis Communication and Public Information Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
*13. Crisis communication strategy	86%	124	<b>143</b>
14. Public Affairs/Information Officer is risk communication trained	81%	116	<b>143</b>
15. Release of casualty numbers to external agencies	79%	114	<b>143</b>
<b>VISN</b>			
*8. Crisis communication strategy	67%	14	<b>21</b>
9. Public Affairs/Information Officer is risk communication trained	86%	18	<b>21</b>
10. Release of casualty numbers to external agencies	81%	17	<b>21</b>
<i>* Indicates assessment parameter.</i>			
<i>** High scores indicate YES responses (choices 4 or 5).</i>			

Eighty-six percent of the medical centers (124 facilities) have a crisis communication strategy for all hazards events, although only 62 percent (89 facilities) update this plan annually. Only 14 of the 21 VISNs have a crisis communications strategy, and only 9 of them update these annually.

Certain components of the crisis communications plan were more likely to be tested in a drill such as communications with the command post, call back cascade for staff, and multiple and redundant methods of communication. Other components of the crisis communications plan were significantly less likely to be tested, including VAMC communication with the media (though this may be deferred to the VISN in certain plans), communication with public health agencies, communications with alternate treatment sites, and patient information inquiries. Those VISNs with a plan for communication with the media (12 networks) tested it 100 percent of the time.

Factor analysis demonstrated that sites with a crisis communication plan were four times more likely to fall at the 60<sup>th</sup> percentile or greater than those without such a plan. This is not to infer a causal relationship here; this may be related to other factors that directly promote overall preparedness (for instance, a diligent director who pays close attention to all aspects of preparedness, including a crisis communication plan).



Exhibit 22 provides additional details regarding crisis communication strategies, including the key components, the number of VAMCs and VISNs having a particular component of a plan, and the proportion of VAMCs and VISNs with a plan that has been tested in a drill.

Exhibit 22 – Crisis Communication Plan Components Accounted and Tested (VAMC n=124, VISN n=14)

	# VAMCs		# VISNs	
	Included in Plan	Tested in Drill	Included in Plan	Tested in Drill
Communication with command post	124	123	12	11
Call back cascade for essential workers	123	114	12	10
Multiple methods of simultaneous communication with staff	122	117	12	10
Backup method for communication failure	120	111	12	10
Communication with responder agencies	121	109	8	6
Communication with media outlets	118	81	12	12
Communication with public health agencies	116	86	10	7
Communication with alternative treatment sites	115	90	11	9
Staff information/call-in inquiries	109	79	10	7
Patient condition/location inquiries	108	63	7	5

Ensuring that consistent and accurate casualty information is provided to outside agencies is crucial to an understanding of the incident’s scope. Seventy-nine percent of the medical centers (114 facilities) have procedures for the release of information to external agencies regarding the number of casualties. Seventeen of the 21 VISNs (81 percent) have such procedures.

**Summary Comments.** Almost 90 percent of VAMCs have a crisis communication strategy and update their plans annually. However, less than half of the VISNs have such a strategy and update it annually. While significant improvement is required on the VISN level, 100 percent compliance of the medical centers is an important objective of this relatively low cost, but potentially high yield, planning endeavor. More assiduous testing of communication plans is advisable and should approach 100 percent in critical categories. A particularly important element to have in place and test, at least on an annual basis, is the call back cascade of essential workers. Employee turnover and changing phone numbers create potential points of failure in these cascades.



### 6.2.6 Resource Management

No organization can fully prepare for every conceivable emergency. To use resources effectively, a hospital requires information that will help emergency planners make informed decisions regarding the type, probability, severity, and impact of specific hazards to which the hospital might be subject. Resources include supplies and material, as well as

personnel, pharmaceuticals, and contingency supply plans. The questions in this category relate to the integrity and resiliency of the supply chain.

Survey Responses to Issues Addressed by Resource Management Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
*16. Participate in Disaster Emergency Medical Personnel System	94%	134	<b>143</b>
*17. Identified contingency providers of supplies	82%	118	<b>143</b>
*18. Agreements for accessing additional medications	67%	96	<b>143</b>
<i>* Indicates assessment parameter.</i>			
<i>** High scores indicate YES responses (choices 4 or 5).</i>			

VHA uses its Disaster Emergency Medical Personnel System (DEMPS) to recruit, maintain, train, and deploy registered individuals during national disasters or VA emergencies. Although hosted by the Emergency Management Strategic Healthcare Group (EMSHG), the overall responsibility for recruitment and maintenance of DEMPS volunteers rests with VISNs and medical center directors. VHA DIRECTIVE 2003-052, dated September 23, 2003, governs DEMPS but does not address any pre-deployment training for volunteers. Ninety-four percent of the medical centers (134 facilities) participate in DEMPS; however, the number of provider volunteers enrolled in the program is quite modest. In addition to DEMPS, there are other mechanisms to marshal essential personnel when needed. As noted earlier, such procedures were used during the hurricane disasters that struck Florida during 2004.

Eighty-two percent of VAMCs have identified contingency sources for essential supplies. Response to this question proved to be highly associated with overall preparedness in a predictive model generated by logistic regression.

Only 67 percent of VAMCs reported having agreements in place to access additional medications. This is a paradoxical response since all VA facilities have onsite access to caches of pharmaceuticals and can readily obtain more under existing arrangements. Medications and supplies may be shipped from nearby facilities and VISNs, the Consolidated Mail-Out Pharmacies (CMOP) or the National Acquisition Center (NAC). This response suggests that the individual respondents were not aware of these arrangements or interpreted the question as referring to agreements with non-VA sources.

**Summary Comments.** A particular strength of the VA is its contingency access to medications and supplies in the event of emergency. The VA provides caches of supplies and medications to each of its 143 facilities. Eighty-nine of these are large caches which can be used to care for up to 2,000 patients for 1 to 2 days and 54 are small caches which can be used to care for up to 1,000 patients for 1 to 2 days. Every facility can receive additional medications and supplies from



a variety of sources. While DEMPS provides a mechanism for recruiting, tracking, and deploying a pool of VA volunteer staff, the number of registered volunteers is modest at best. The need for multiple levels of approval for each volunteer may create barriers to recruitment. The VA has supplemented this process with other, more direct means of recruiting personnel when urgently needed. The civilian community has struggled with Emergency Services Advanced Registration for Voluntary Health Personnel (ESAR VHP) because of the challenges related to licensing, credentialing, and liability. The ability to deploy resources is a relative strength in the VA's ability to respond.

### 6.2.7 Operations, Procedures, and Mutual Aid

The questions posed in this category cover a broad range of important preparedness processes and issues. These include procedures relevant to posting and disseminating important care guidelines, surge capacity of staff, the ability of the lab to respond, and the ability of the morgue to expand capacity. Question 22, which addresses staff expansion issues, is the only designated assessment parameter in this category.

Fifty percent of medical centers (72 facilities) post wall charts and 65 percent (93 facilities) distribute pocket cards to physicians to help guide

treatment of WMD agents. Since providers do not frequently care for victims of chemical or biological attacks, most will need guidance in the early stages of syndrome recognition and treatment. While there are other means of efficiently obtaining information, including: reference books, key Web sites, and sub-specialist consultations, low cost and low tech approaches such as prominently displayed wall charts provide a layer of redundancy; approaches such as these wall charts provide access to information that is rarely used but must be easily and quickly accessible when needed.

The ability to expand staff capacity is among the most critical in responding to a mass casualty event; related procedures include those applicable to call back lists, overtime policies, staffing centers, etc. Ninety-four percent of medical centers (134 facilities) have procedures for expanding staff availability during a mass casualty event. Critical departments such as the emergency department, critical care, laboratories, security, and food service were included 90 to 99 percent of the time. The plan for expanding staff was tested in a drill in these critical departments 85 to 100 percent of the time. Several clinical areas such as trauma, burn care, and

Survey Responses to Issues Addressed by Operations, Procedures, and Mutual Aid Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
19. Wall charts in emergency patient care areas	50%	72	<b>143</b>
20. Pocket cards distributed to physicians	65%	93	<b>143</b>
21. Morgue capacity increase for mass fatalities	53%	76	<b>143</b>
*22. Expanding staff availability during mass casualty	94%	134	<b>143</b>
24. OSHA compliant respiratory protection program	97%	139	<b>143</b>
25. Procedures for managing cache of supplies/medicines	92%	132	<b>143</b>
26. Clinical lab has plan for mass casualty/bioterrorism event	53%	76	<b>143</b>
27. Agreements to transfer mass casualty patients	83%	119	<b>143</b>
<i>* Indicates assessment parameter.</i>			
<i>** High scores indicate YES responses (choices 4 or 5).</i>			



pediatrics scored very low (less than 35 percent); however, this may be misleading since most VAMCs do not have dedicated units that offer these services. In both the factor analysis and logistic regression model, the ability to surge during a mass casualty event was strongly associated with higher overall preparedness.

Medication and supply caches are vital resources in responding to an unexpected surge of patients. Ninety-two percent of the medical centers (132 facilities) have procedures for managing the VA cache of medications and supplies, although 30 percent have not tested these procedures. The logistics of managing medication caches is complicated and, in a real emergency, has to be executed efficiently and flawlessly; these are important procedures to test.

Other procedures relevant to surge capacity are the ability to expand morgue capacity and disaster response planning for clinical laboratories. Only fifty-three percent of medical centers (76 facilities) have procedures for increasing morgue capacity for a mass casualty incident, and only 20 of these 76 medical centers have tested their procedures in drills. VHA's Office of Operations and Management indicates there are approximately 135 facilities with morgues. The remaining facilities rely on contract services, local funeral homes, or on the medical examiner when necessary.

Fifty-three percent (76) of the medical centers' clinical laboratories have a disaster response plan for managing a mass casualty or bioterrorism event, and 55 of these update the plan yearly. Of those 76 with a plan, only 61 VAMCs have written procedures for safe handling and transport of CDC Category A agents, and only 63 have a protocol for working with the Laboratory Response Network (LRN) and/or the state public health laboratory. (These facilities are different ones from the 16 facilities with 19 specialized laboratories that possess and work with Category A agents. These 19 laboratories function under stringent security standards, and are inspected annually. This question refers to routine clinical laboratories, which may confront a bio-agent for the first time during an attack and would benefit from having a procedure in place that had been previously tested.)

A very high percentage of VAMCs (97 percent) have a written, Occupational Safety and Health Administration (OSHA) compliant respiratory protection program. This is particularly noteworthy since the OSHA program was only recently disseminated (January 2005).

**Summary Comments.** Levels of preparedness in this category cover a broad spectrum of readiness capabilities. While VA has been diligent in establishing security standards for the limited number of labs that routinely handle Category A Agents, it would be prudent to adopt procedures for clinical laboratories that may only encounter such agents at the time of attack. These procedures should then be tested. It would be prudent for those VAMCs with morgues to develop procedures for expanding morgue capacity. More VAMCs need to test their procedures for managing medication and supply caches, and compliance in this category should be in excess of 90 percent.



While all elements of surge capacity — space; beds; equipment, medications, and supplies; and human resources — are vital, competent, and organized human resources, they are often the most valuable and the most difficult assets to quickly expand and maintain. A very high percentage of medical centers have procedures for expanding staff and the VA has previously demonstrated its ability to marshal human resources when urgently needed. This is a particular strength of the VA’s ability to respond.

### 6.2.8 Logistics and Facilities

Another critical category is logistics and facilities. This category, which contains the largest number of primary questions in the survey, focuses largely on the ability to maintain continuity of operations. Examples include issues pertaining to security, emergency power, and provisions for feeding and housing staff. Another group of questions focuses on decontamination capabilities; however, discussion of these issues is deferred to the decontamination category.

Continuity of systems such as electrical power, water, sewage, and refrigeration represent critical

infrastructure. Building redundancy through backup systems, or backup agreements with suppliers, are ways in which risk can be mitigated. Eighty-five percent of medical centers (122 facilities) have backup agreements to cover loss of critical systems and supplies. Among those responding yes to this question, more than 95 percent had agreements in the critical areas of electrical power, drinking water, fuel, and medical gas. Eighty-six to 87 percent had agreements regarding running water; heating, ventilation, and air conditioning; laboratory refrigeration; medical waste; and access to patient care plans. Ten VAMCs have not communicated information regarding these backup agreements to the staff.

The 2004 hurricane season in Florida highlighted the need for additional redundancy in supplies such as water and emergency power, including coverage of air conditioning systems. According to the VHA Office of Operations and Management, documented emergency generator testing is conducted monthly as required by NFPA and JCAHO. Additionally, VHA policy requires a full disconnect from the electrical utility every three years to assure that electrical power can be provided on a continuous basis. In August 2003, a major power outage hit the East Coast and 28

Survey Responses to Issues Addressed by Logistics & Facilities Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
28. Procedures to ensure physical security of facility	99%	141	<b>143</b>
29. Lockdown procedures	93%	133	<b>143</b>
*30. Backup for loss of systems/supplies	85%	122	<b>143</b>
*31. Clinical areas have internet access	100%	143	<b>143</b>
32. Housing and feeding provisions	79%	113	<b>143</b>
*33. Mental health support during mass casualty	89%	128	<b>143</b>
38. Facility has negative pressure isolation rooms	97%	138	<b>143</b>
39. Facility can control HVAC systems	91%	130	<b>143</b>
<b>VISN</b>			
*11. Backup for loss of systems/supplies	77%	16	<b>21</b>
*12. Procedures to ensure physical security of facility	71%	15	<b>21</b>
13. Lockdown procedures	66%	14	<b>21</b>
<i>* Indicates assessment parameter.</i>			
<i>** High scores indicate YES responses (choices 4 or 5).</i>			



VAMCs lost power, but all facilities were able to continue operations using electricity supplied through the emergency generators.

All 143 medical centers indicated that they have Internet access. Ten sites indicated that they did not have Internet access in all clinical areas. While all clinicians and other key staff should have ready Internet access, it may not be essential that every clinical unit have such access as long as an easily accessible adjacent unit has access. Although not probed in the survey, there are implications for understanding relationships between Intranet and Internet applications that may have mission critical importance. This survey also did not probe cyber medical security that may affect the integrity of electronic health records or medical devices, but this may be a category of inquiry to consider in the future.

All but 2 VA medical centers (141 facilities) have procedures in place to ensure the physical security of the facility, although 8 facilities report that those procedures have not been communicated to the staff. Fifteen of the 21 VISNs have procedures in place to ensure the physical security of the facilities. Fourteen of the 21 VISNs report having the ability to lockdown all buildings in the VISN facility, but half of them have not tested these procedures. Both communication of plans to staff and testing procedures can decrease confusion and uncertainty when an event occurs.

As recent terrorist events and natural disasters have demonstrated, violence, injury, death, and destruction of communities have far-reaching mental health effects. This trauma may be experienced directly by victims and indirectly by others. The latter form of indirect psychological trauma has been called “vicarious trauma” and frequently afflicts caregivers. The manifestations of this post-traumatic stress disorder can mimic those experienced by the direct victims of trauma.<sup>21</sup> Mental health support is therefore an important component of preparedness. Ninety-one percent of the medical centers (128 facilities) provide mental health support to staff and families in a mass casualty event. The provision of mental health services for patients was also addressed in the planning section as a component of the facilities’ EOPs, and 97 percent of the facilities offer this service to their patients.

Access to isolation rooms is critical to prevent the spread of contagious infectious agents in a facility. Examples include tuberculosis, SARS, pneumonic plague, and small pox. Mere suspicion of such a diagnosis should result in isolation until that suspicion can be ruled out. Ninety-seven percent of VAMCs have available isolation rooms; in aggregate there are approximately 1,800 isolation rooms nationwide. In 68 percent of VAMCs (97 facilities), the number of rooms is fixed, with a wide range of rooms (from 1 to 51). The total number of available fixed beds available are 1,024. An additional 29 percent of VAMCs (41 facilities) responded that they have the ability to expand the number of isolation rooms available. These facilities have a total of 487 isolation rooms. In this the total number of expandable rooms in each

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<sup>21</sup> Palm Kathleen, Polusny Melissa, Follette Victoria. Vicarious Traumatization: Potential Hazards and Interventions for Disaster and Trauma Workers. *Prehospital and Disaster Medicine*. January–March 2004. <http://pdm.medicine.wisc.edu>.



of these VAMCs ranges from 2 to 35 rooms, with a total capacity of 239 expandable rooms. Exhibit 23 below depicts the total number of isolation rooms available at the 143 responding sites. Exhibit 24, also below, indicates the number of facilities that have the ability to expand their number of isolation rooms and the potential ranges of these expansions.

Exhibit 23 – Fixed Number of Negative Pressure Isolation Rooms Available

# of Rooms	# of Facilities
1-2	15
3-5	27
6-10	37
11-20	34
21-40	21
more than 40	2

Exhibit 24 – Expandable Negative Isolation Rooms

# of Rooms	# of Facilities
1-2	13
3-5	10
6-10	10
11-20	2
21-40	2
more than 40	1

**Summary Comments.** In most categories relevant to continuity of operations, the VAMCs scored high with regard to having “backup agreements” in place. In some of the more critical areas such as drinking water, electrical power, fuel, and medical gas, provisions for redundancy should be 100 percent. It may be that there are other contingency plans in place that were not captured by the question as worded. In a small percentage of cases, staff were not informed of backup plans or measures to ensure security. Disseminating such information in advance can help decrease confusion during an emergency. In general, VAMCs have recognized the importance of mental health services as an important dimension of preparedness.

Isolation capacity that includes High Efficiency Particulate Air (HEPA) filtration and meets CDC air exchange guidelines presents a challenge for all hospitals and hospital systems. In case of a small pox, SARS, or avian flu outbreak in a community, a hospital may need prompt access to multiple isolation rooms to limit intra-facility spread of disease. However, given competing care priorities, it is often hard for hospital administrators to justify the large expenditures necessary to create multiple isolation rooms when the events for which they are intended are statistically improbable.

The VA has a significant pool of isolation rooms — approximately 1,800 nationwide. The question is whether they are appropriately distributed. It is beyond the scope of this survey to verify appropriate distribution in a comprehensive fashion; however, an initial review of the capabilities of the CDC 21 Cities provides some initial insights (See Exhibit 28). In each of these cities, all VAMCs have 10 or more isolation beds. Only one, Dallas, had none at the time of the survey, although plans to create isolation rooms are currently being developed. These rooms should be distributed based on assessments of local risk, the nature of the facility, and community capabilities. The VA has used this principle in its plan to distribute decontamination equipment and it should be applied to these isolation room resources as well.



It is worth noting that there have been recent innovations in developing low cost solutions to isolation rooms.<sup>22</sup> These were presented at the 2003 national meeting of the HRSA National Hospital Bioterrorism Program. The VA might consider exploring these approaches with HRSA, or the principal investigators who developed these solutions.

### 6.2.9 Training

The training category includes seven VAMC questions and four VISN questions, all of which are assessment parameters. The questions pertain to training key personnel such as clinicians and the Emergency Preparedness Coordinator, as well as participation in regional exercises. There is one question relevant to decontamination, discussion of which will be deferred to the decontamination section of this report.

**Background.** Healthcare providers and institutions become expert at what they do by doing it on a regular basis.

That is the premise upon which provider and institutional specialization is based, and it is why we seek out cardiothoracic surgeons when we need a coronary bypass, and infectious disease experts when confronted with resistant strains of malaria or tuberculosis. On an institutional level, hospitals that perform high volumes of a particular procedure tend to have better outcomes.

Preparedness presents a challenge to a medical culture in which expertise is based on actual practice and experience. Terrorist events employing biological agents or chemical agents are, thankfully, rare events. But because they are rare, providers and hospitals that will be called upon to care for victims do not have practice based expertise to leverage in responding to these events. It is the rare provider who has actually cared for a victim of sarin, anthrax, or other unusual tools of terror. It is uncertain whether most providers would even recognize a case of tularemia or pneumonic plague if presented to them. Because such experience is rare, high quality, time efficient, repeat training is vital to achieve an adequate state of preparedness. Repetition is essential because if practitioners do not use what they learn in daily practice, the knowledge quickly decays. Such training should be subject to measurable and trackable impacts on competency, that is, it should be “competency based training.”

Survey Responses to Issues Addressed by Training Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
*40. Staff educated and trained on EOP roles	81%	117	<b>143</b>
*41. All hazards training for clinicians	37%	53	<b>143</b>
*42. Training for EPM/EMC	85%	121	<b>143</b>
*44. Emergency Preparedness Coordinator training on regional emergency planning group's plan	50%	72	<b>143</b>
*45. Staff participate center-wide/regional drills	95%	136	<b>143</b>
<b>VISN</b>			
*14. Staff educated and trained on EOP roles	67%	14	<b>21</b>
*15. Training for EPM/EMC	86%	18	<b>21</b>
*16. Training on regional emergency planning group's plan	48%	10	<b>21</b>
*17. Staff participate center-wide/regional drills	67%	14	<b>21</b>
* Indicates assessment parameter.			
** High scores indicate YES responses (choices 4 or 5).			

<sup>22</sup> Rosenbaum, Rob. Upgrading Airborne Infectious Disease Isolation Capacity. <http://www.cadamedia.com/archives/osp/nbhpp2003/transcripts/session13g.htm>



While the nature of provider training is somewhat unique, the need for high quality, time efficient, repeat training applies to other key response participants, including administrators, emergency department registration staff, engineers, dietary staff, security staff, environmental services staff, and others who will be called on to play roles and perform functions outside their daily routines.

As noted earlier, training is also relevant at the institutional level. Level I Trauma Centers have better outcomes for severe trauma, in part because of the expertise and daily practice of their staff, but also because there are systems and processes in place which have been honed and refined by years of institutional experience. Though a poor substitute for actual experience, intra- and inter-institutional exercises can hone essential response processes and identify weaknesses and flaws in these processes. These exercises must also be high quality, time and cost efficient, and repeated at regular intervals. Furthermore, because these events often affect an entire community, planning and execution of certain exercises should be community-wide or regional.

Given the importance of education and training, it is not surprising that, in our analysis, training contributed the greatest number of significant factors (three out of eight) to a logistic regression model that best predicted those VAMCs most likely to have high preparedness scores. The relevant training variables were medical centers that have participated in a community-wide drill in the past year, medical centers that have prepared and communicated through after action reports following drills, and medical centers that provide all hazards event training to emergency clinicians.

**Findings.** In view of the importance attached to training, especially with regard to providers, one of the more significant findings is that only 37 percent of VAMCs (51 facilities) reported having a mechanism to provide all hazards training to emergency clinicians, including physicians and nurses. This finding is paradoxical since the VA Employee Education System (EES) offers a broad range of programs for a wide range of staff, including clinicians. These programs include conferences, print materials, courses, satellite broadcasts, Web based training programs, and independent studies. A full listing of these programs was provided by VHA Office of Operations and Management and it can be found in Appendix 10. In addition to this training, staff also has the availability of training through academic affiliates, local and state health departments, and even private entities. The response to this question suggests a low level of awareness and/or underutilization of these training opportunities. It is also notable that facilities responding affirmatively to this question (by reporting the existence of a mechanism to train clinicians) were almost seven times more likely to score higher on the survey than their counterparts (OR=6.77). Selected areas of training provided by the 51 facilities that report offering clinician training are detailed in Exhibit 25 below.



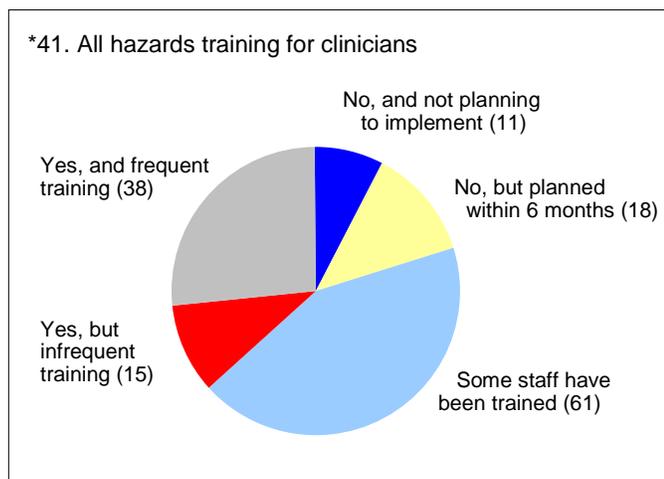
Exhibit 25 – Training Provided to Emergency Clinicians (VAMC n=51)

	Training Provided	Tested in Drill
Isolation for infectious patients	100%	75%
Mass casualty triage	94%	90%
Common presentation of chemical exposure	94%	73%
Psychological support for victims	90%	64%
CDC Category A biological agents	90%	61%
Decontamination procedures	88%	80%
Common internal injuries from explosions	82%	71%

Eighty-one percent of the medical centers (117 facilities) have educated their staff (including awareness level training) on their roles in the EOP; however, only 59 percent (85 facilities) do so annually. Only 14 of the 21 VISNs educate their staff in the EOP, and only 29 percent do so annually.

Eighty-five percent of medical centers (121 facilities) provide all hazards training to their Emergency Management Coordinator; however, only 61 percent of the medical centers (87 facilities) do so at least every two years. Eighteen of the 21 VISNs currently train their Emergency Management Coordinator, with 13 of them doing so at least every two years, and 5 of them provide this training less frequently than every two years.

Exhibit 26 – All Hazards Training for Clinicians



Source: Survey Question #41, 2004

Only 50 percent of the medical centers (72 facilities) have trained EOP designated personnel on the regional emergency planning group's all hazards response plan. Twenty-one percent (30 facilities) had no plans to train designated individuals in the regional emergency planning group's all hazards plan. Only ten of the 21 VISNs have trained designated individuals in the regional



emergency group's all-hazards plan, but an additional eight VISNs plan to train designated individuals within six months of the survey.

Ninety-five percent of the medical centers' staff members (136 facilities) participate in medical center-wide and/or regional mass casualty exercises or drills, although 18 percent (26 facilities) do not do so annually<sup>23</sup>. In contrast, only 14 of the 21 of the VISN staff members participate in these drills, with 5 VISNs participating less often than annually.

**Summary Comments.** Providing adequate training for staff, particularly healthcare provider staff, is a challenge in most American hospitals. Training can be costly, consumes scarce human resources, and often is not considered a high priority by providers given the competing demands placed on their limited time. However, it is vital that hospital staff understand their roles in an emergency, and it is important that clinicians can at least recognize suspicious syndromes when they present. The VA should shift its emphasis from merely making training available to promoting accountability in training. It is important to know who has been trained in relevant domains, what they have learned, and what they have retained over time. Impact on role based competencies should be measurable, reportable, and trackable at the individual, station, and VISN level. Web based learning technologies make such assessments feasible.

It is reasonable to propose that 100 percent of VAMCs and VISNs train their Emergency Management Coordinators and that training or a refresher course should be annual. A similar level of compliance should apply to educating staff, even on an awareness level, to their roles in the EOP.

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<sup>23</sup> VHA Office of Operations and Management monitors JCAHO All Hazards audits and is unaware of any noted deficiencies with regard to the emergency management program in general or to a lack of the two required annual exercises.



Exhibit 27 – Preparedness Training by VISN

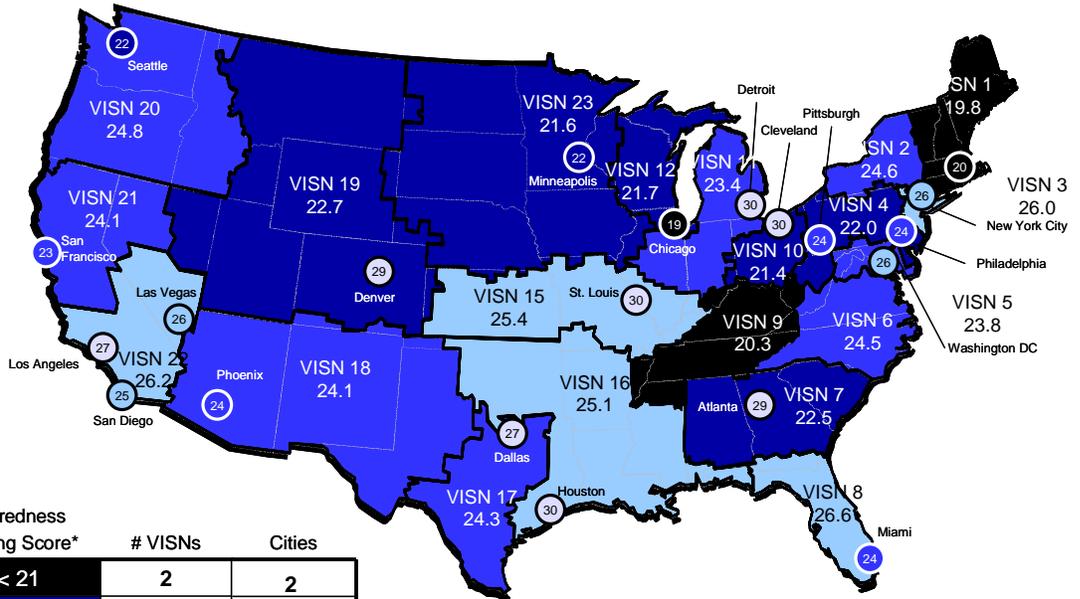
The Training map depicted below provides an analysis of survey respondents' participation in training initiatives. This category includes all questions found in the Training section of the survey, as indicated to the right. Urban area scores appearing on this map were calculated using MSAs. Where multiple VAMCs were located within an MSA, scores were averaged to create a single score.

This analysis found that although eight of the 21 cities scored high in training (27 points or greater out of 30 points total), no VISN scored in this range. Two cities, Chicago and Boston scored low (less than 21) and VISN 1 and 9 scored in the low range. Five VISNs scored between 25 and 26 (VISN 3, 8, 15, 16, and 22) where eight VISNs scored in the mid-range (VISN 2, 6, 11, 17, 18, 20, and 21).

**Questions used to create Training Map**

- \*40. Staff educated and trained on EOP roles
- \*41. All hazards training for clinicians
- \*42. Training for EPM/EMC
- 43. OSHA standard training to decontamination response personnel
- \*44. Emergency Preparedness Coordinator training on regional emergency planning group's plan
- \*45. Staff participate center-wide/regional drills

*\* Indicates assessment parameter*



Preparedness Training Score*	# VISNs	Cities
< 21	2	2
21-22	6	2
23-24	8	5
25-26	5	4
27+	0	8

\* Score on Questions 40 - 45

\*\* Max Score 30



### 6.2.10 Decontamination

Unlike the previous nine categories, this category did not have a dedicated set of questions; rather, decontamination questions were distributed throughout the other nine categories. Because decontamination capability is of critical importance, and an area of recent focus for the VA, we have consolidated the decontamination related questions in this section. There are more questions in this category than in most others. Many questions included additional interrogatories for those who responded, “yes” to the initial survey questions, and a select few of those sub-questions are represented in the box at right (see question 43 as an example).

**Background.** Rapid decontamination is crucial to the care of patients with chemical exposures and to the maintenance of a clean environment inside a medical facility caring for those patients. According to the VA Office of Public Health and Environmental Hazards (*Rapid Contingency Plans for Responding to Victims of a Chemical Attack: Handling Casualties and*

*Decontamination October 2001*), all medical centers need a plan for handling chemical casualties, at least on a temporary basis. On March 27, 2002, the VHA set the following goal: “Each VAMC will achieve a hospital mass casualty decontamination capability that is appropriate to its needs and that meets basic criteria for quality and cost-effectiveness.” The VA has identified four fundamental elements of decontamination capability: a decontamination plan, access to decontamination showers, trained staff, and access to personal protective equipment. In some cases, medical centers have addressed these requirements by developing mutual aid agreements. These agreements may be with other hospitals, fire departments, or other entities that can provide the appropriate resources. In an effort to raise the standard in decontamination preparedness, the VA has established two Decontamination Centers of Excellence — the Bay

Survey Responses to Issues Addressed by Decontamination Questions	High scores vs. Total Responses **		
	%	#	Total
<b>VAMC</b>			
2. Designated Team/Individual to Manage Decontamination	82%	117	143
*4. Emergency Operations Plans with SOPs	95%	136	143
23. EOP has procedures for decontamination	54%	77	143
*34. Access to decontamination showers	62%	89	143
36. Clinical personnel have 24/7 access to chemical detectors	26%	37	143
*37. Decontamination personnel have personal protective equipment	68%	97	143
Staff trained in proper usage of personal protective equipment – some staff	48%	63	143
Staff trained in proper usage of personal protective equipment – all staff	19%	27	143
*41. All hazards training for clinicians	37%	53	143
Decontamination procedures – staff tested	29%	41	143
43. OSHA standard training to decontamination response personnel	54%	77	143
OSHA-level operations training for those pre-designated to work in the decontamination area – conducted training	49%	69	142
OSHA-level operations training for those pre-designated to work in the decontamination area – tested	36%	51	142
OSHA-level awareness training for any staff who might encounter self-referred contaminated victims – conducted training	40%	57	142
OSHA-level awareness training for any staff who might encounter self-referred contaminated victims – tested	26%	37	142
<b>VISN</b>			
*3. Emergency Operations Plans with SOPs	72%	15	20

\* Indicates assessment parameter.

\*\* High scores indicate YES responses (choices 4 or 5).



Pines and Little Rock VAMCs. These Centers have created robust programs to educate and train staff from other VAMCs.

Prior experience has shown that many who are exposed to a chemical agent will leave the scene and come directly to the hospital without undergoing previous decontamination procedures at the scene of the exposure.<sup>24</sup> It is essential that exposed victims have their clothing removed and be promptly cleaned in some fashion using water. Those performing the decontamination procedure must be appropriately protected with Personal Protective Equipment (PPE) that is properly fitted and that they have been trained to use.

The optimal method of cleansing includes exposure to a shower like device such as in a dedicated decontamination facility or an appropriately rigged fire hose. (In resource limited environments such as the battlefield, sponges and buckets of water may be used.) Ad hoc solutions, such as hoses, may limit the numbers who can be rapidly processed and are problematic in cold weather environments. Other concerns relevant to these ad hoc solutions include privacy, nighttime lighting, and handling of non-ambulatory patients. On the other hand, dedicated decontamination facilities are expensive.

While decontamination is most often associated with chemical exposures, appropriate PPE is relevant to both chemical exposures and exposure to contagious biological agents. Until recently, PPE for decontamination has been an area with little regulatory guidance or national standards in the hospital setting. In July 2004, OSHA released its first official guide entitled, "*OSHA Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances.*" While this is not a regulatory document, it is one of the first published sources with definitive guidance in the area of decontamination PPE for healthcare workers (also known as first receivers) since September 11, 2001.

This document provides information to assist medical centers in selecting appropriate PPE and, "consolidates OSHA standards and interpretations on training needs of first receivers."<sup>25</sup> As others have noted, PPE selection should be based on a medical center's hazard and vulnerability assessment and other relevant community information. PPE is only effective if accompanied by adequate training. OSHA states that medical centers, "should document how training requirements are met, and annual refresher training be provided." Alternatively, the medical center may test the provider annually to document proficiency.<sup>26</sup>

**Findings.** Sixty-two percent of the medical centers have their own showers, and 15 percent have access to showers from another source. VA has recently conducted an assessment of decontamination needs based on local vulnerability and community capabilities. That

<sup>24</sup> Matsui Y, Ohbu S, Yamashina A. (1996). "Hospital deployment in mass sarin poisoning incident of the Tokyo subway system – an experience at St. Luke's International Hospital." Tokyo. Japan Hospitals. 15:67-71.

<sup>25</sup> Occupational Safety and Health Administration. "OSHA Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances." Final Draft, July 2004.

[http://www.osha.gov/dts/osta/bestpractices/html/hospital\\_firstreceivers.html](http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html)

<sup>26</sup> Ibid.



assessment will drive further allocation of decontamination resources. There is some question regarding the 15 percent that reported access to showers from another source. It is unclear how quickly this “other source” will be able to respond to the VAMC in an emergency. For example, a local fire department may have agreements to assist multiple hospitals in a locality, and several may call on that fire department simultaneously. It would be advisable to explore more deeply the nature of these agreements.

While the Decontamination Centers of Excellence have initiated an ambitious program to train trainers who will in turn train the staff at their respective facilities, the impact of that program has not yet percolated through the system. Only 31 percent of hospitals provide decontamination training to their staffs and only 54 percent of hospitals provide OSHA standard training to those staff likely to be part of decontamination response. Only 54 percent of hospital EOPs address decontamination procedures.

Currently, 68 percent of the medical centers report that they have PPE for those involved in the decontamination response and half of those have sufficient equipment only for the initial response period (less than 24 hours). While ninety-nine percent of VAMCs with PPE have trained some or all of the staff in the proper use of the equipment, only 30 percent have trained all staff in the proper use of the equipment.

Decontamination capability is an important predictor of overall preparedness. Facilities performing well in the decontamination category (indicating capability to provide decontamination services during a mass casualty event) were most likely to score high in the survey overall, and this was an important differentiating factor between high and low scoring facilities. (OR=7.96 for access to decontamination shower, OR=9.15 for providing PPE to decontamination personnel.) Bay Pines, Florida, and Little Rock, Arkansas, scored the maximum number of points in the decontamination category.

Exhibit 28 – Cities Grid

	Isolation Beds>10	Decon Showers	Clinical Training in All Hazards	OSHA Decon Training
Atlanta	✓	✓	✓	✓
Boston	✓	✓		✓
Chicago	✓			
Cleveland	✓	✓	✓	✓
Dallas		✓	✓	
Denver	✓	✓	✓	✓
Detroit	✓	✓	✓	✓
District of Columbia	✓		✓	
Houston	✓	✓	✓	✓
Las Vegas	✓	✓	✓	✓
Los Angeles	✓	✓	✓	
Miami	✓	✓	✓	✓



	Isolation Beds>10	Decon Showers	Clinical Training in All Hazards	OSHA Decon Training
Minneapolis	✓	✓	✓	✓
New York	✓	✓	✓	✓
Philadelphia	✓	✓	✓	✓
Phoenix	✓		✓	
Pittsburgh	✓	✓	✓	
St. Louis	✓	✓	✓	✓
San Diego	✓	✓	✓	
San Francisco	✓	✓		
Seattle	✓	✓	✓	✓

**Summary Comments.** While some of the scores in this category were low, it is important to frame these results in context. Unlike other categories in which high scores could be achieved through relatively inexpensive planning activities, decontamination readiness is a resource intensive activity. Dedicated external shower facilities are expensive. Some types of PPE can also be costly and the time devoted to training and yearly assessment/retraining can consume significant resources. These are issues that non-VA hospitals across the country are grappling with as well, and it is not clear that VA is below average performance in the general hospital community. VA has recently embarked upon an assessment of local needs for decontamination capability that will help promote a rational distribution of these resources. VA's commitment to training via the Decontamination Centers of Excellence is laudable and represents a unique capability that is in short supply throughout the preparedness community. These centers are new and the full impact of their training has yet to be felt. It will be useful to assess and document their impact in subsequent surveys.

Many interventions can be made that would not be highly resource dependent. All EOPs should include some procedure for decontamination. As noted above there should be a more detailed examination of the means by which 15 percent of facilities have access to decontamination showers. There should be a reasonable level of certainty that access to those showers will be prompt and will not be compromised by other agreements the service provider may hold. Staff training appears to be an issue with regard to both decontamination procedures and the use of PPE. Improved training of those likely to participate on a decontamination team is important, although awareness training for all staff members who may encounter contaminated victims is also important. VA should define the categories of staff members who should receive PPE training and the type of PPE on which they should be trained.



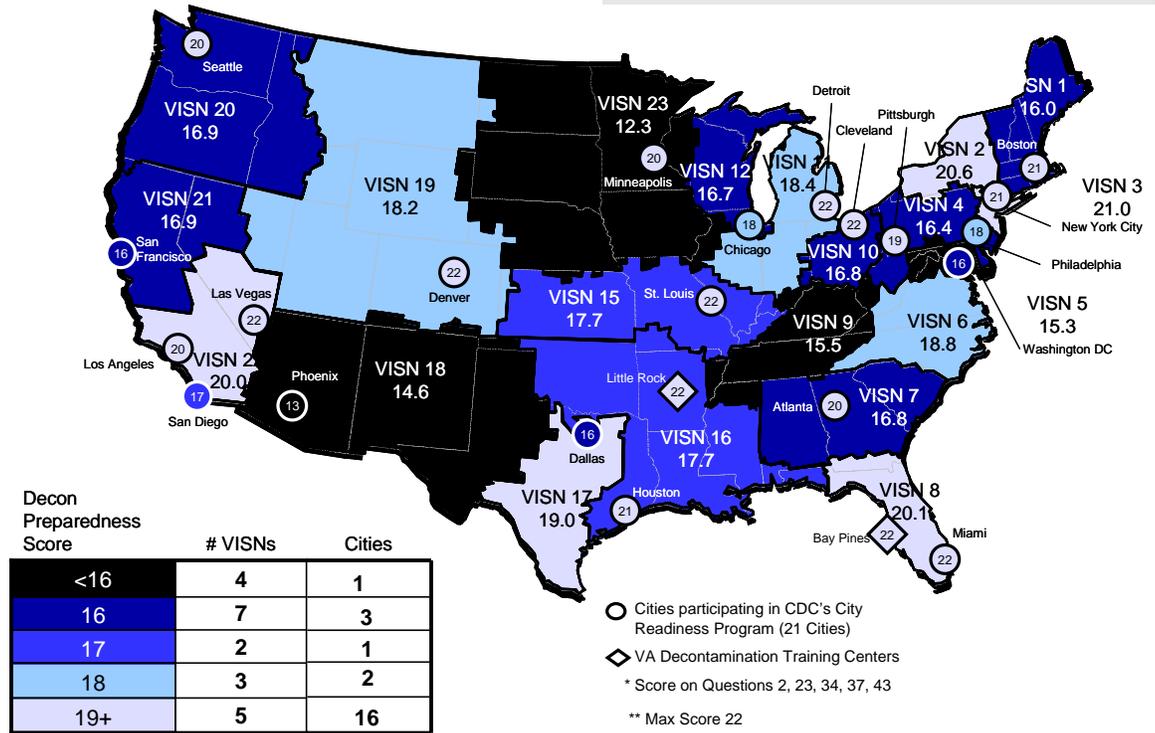
Exhibit 29 – Decontamination Preparedness Map

The Decontamination Preparedness map provides a geographic representation of the relative decontamination capabilities of VISNs and VAMCs located in high-population/high-risk urban centers, and the two Decontamination Centers of Excellence (Bay Pines and Little Rock). Scoring for this category consolidates the scores for selected survey questions relevant to decontamination preparedness.

**Issues Addressed by Decontamination Questions (VAMC survey)**

- 2. Designated Team/Individual to manage decontamination
- 23. EOP has procedures for decontamination
- \*34. Access to decontamination showers
- \*37. Decontamination personnel have PPE

\* Indicates assessment parameter



This analysis revealed a wide variation in decontamination preparedness scores. VISNs 2, 8, 17, and 22 had relatively high decontamination preparedness scores as did VAMCs in Bay Pines, Little Rock, Miami, Las Vegas, Detroit, Cleveland, Denver, and St. Louis. VAMCs located in Northeastern urban centers such as Boston, Philadelphia, and Pittsburgh also scored relatively high in this category although they tended to have lower scores on the overall survey. Networks responding with the lowest level of decontamination capability included VISNs 5, 9, 18, and 23.



## 7. SUMMARY COMMENTS AND RECOMMENDATIONS

From the detailed findings in this report, a number of overarching themes and recommendations emerged. These themes and recommendations are presented below:

### 1) **Continue to strive for 100 percent compliance and greater consistency in planning activities and in establishing command and control structures**

VA facilities and VISNs scored high in most areas related to plans and planning. However, since the planning activity is relatively low in cost but potentially high in yield, 100 percent compliance in specified planning activities should continue to be the goal. In some cases there should be more focus on the comprehensiveness and consistency of individual plans as well as the need to readdress them on an annual basis. This may be facilitated by a checklist approach, which is described below. VA also scored high in most areas relevant to the establishment of command and control structures such as Emergency Management Committees (EMC), Incident Command Systems (ICS), and Emergency Operations Centers (EOC). In the case of EMCs, a more standard membership composition should be considered.

### 2) **Continue to strive for 100 percent redundancy of all critical systems at each VAMC**

As noted above, more than 85 percent of VA facilities indicated they had backup arrangements in the event of critical systems failure. Of these, over 95 percent had backup agreements for electrical power and drinking water. However, there was some variability regarding which critical systems had redundancy. The specific systems that are included in the critical category should be well defined so that expectations are clear at the facility level. In those systems defined as critical, the objective should be 100 percent redundancy.

### 3) **Introduce greater accountability in the approach to training, and place greater emphasis on measurement and the reporting of role based competencies**

The infrequent nature of natural disasters and the rarity of domestic terror events make the maintenance of preparedness and response competencies an ongoing challenge. The need to train VA staff more broadly, including providers, was a recurring theme in various categories of analysis; this needed training includes: incident command training, Emergency Operations Plan (EOP) training, decontamination and Personal Protective Equipment (PPE) training, clinical training, and other relevant topics cited throughout this report. These training gaps are not unexpected in a limited resources environment where other urgent patient care priorities compete for attention daily. The challenge is amplified by the need to continually refresh and evaluate the competency of the VA workforce in a role specific fashion. This is a challenge faced by the preparedness community in general. Nonetheless, VA should devote the necessary resources to provide greater accountability in training.

Assessment and reporting of training impact should occur on the individual, station, and VISN levels. To achieve this goal, a comprehensive strategy on preparedness training and



competency based assessment should be developed. This strategy should include learning technologies that can be used to train a large workforce and measure the impact of that training on role based competencies over time. It should also include sharing and absorbing best practices from other governmental agencies faced with similar challenges such as the Department of Health and Human Services (HHS)--especially HRSA and CDC, the Department of Defense (DoD), and others. Examination of best practices should extend beyond the public sector to leverage experience from the private sector, which increasingly faces ongoing workforce training demands in our knowledge intensive economy.

**4) Continue to assess distribution of expensive resources based on threat assessments, community resources, and facility characteristics**

While even “low risk” communities can be terrorist targets, resources are finite and should be rationally distributed. It is beyond the scope of this survey to determine appropriate allocation at specific locations and in many cases current allocations may be appropriate. Assessment of the distribution of key assets should be based on the perceived need at specific institutions. This may lead to a tiered definition of preparedness with different VAMCs falling into different tiers.

The VA has already embarked on a needs based assessment to distribute appropriate decontamination equipment. This approach should extend to other expensive assets such as isolation rooms. Assessments should focus on the quantitative distribution of resources (for example, the number of isolation rooms in urgent care/emergency departments versus inpatient wards) and should account for different preparedness goals, so that smaller facilities in less densely populated areas are not held to the same standard as large urban, academic facilities. It should be noted, however, that facility size and location are not the only factors: community resources are also a critical consideration. A small VAMC in a rural environment may be the most significant resource in that community, so a significant level of preparedness and resource allocation may be warranted.

**5) Consider the use of more standardized and concise checklists to guide and assess minimum levels of preparedness**

Checklists have been important in assuring thoroughness and safety in the aerospace industry, and they have recently been shown to be very useful in promoting quality and safety in intensive care units as well.<sup>27</sup> The VA's *Emergency Management Program Guidebook* already provides many detailed templates and guidelines to help facilities design their approach to preparedness. However, it may also be useful to provide a concise facility checklist to define minimum expectations in key areas. This checklist should correspond to the preparedness expectations at a facility or class of facilities. This will help standardize the approach to preparedness, provide well defined objectives for managers, and provide a basis

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<sup>27</sup> “Pronovost, Peter J. Acute Decompensation after Removing a Central Line,” *Annals of Internal Medicine*; June 15, 2004 1031



for facility specific assessments in the future. The questions in this VA preparedness survey may be used as a starting point to create facility, and VISN based preparedness checklists.

**6) Augment survey data with site visits to selected high scoring and low scoring facilities**

The apparent range of preparedness indicated by this initial survey suggests a number of opportunities for further exploration. The VA should consider making site visits to a number of the facilities in both the higher and lower ranges of preparedness. The purpose of site visits would be at least twofold:

- Validate and expand upon the findings in this first screening survey and use lessons learned to enhance the survey in the future.
- Identify best practices in the high scoring facilities, and assist lower scoring facilities to improve in areas of greatest challenge.

**7) Consider establishing a mentoring program between high and low scoring facilities with otherwise similar characteristics**

The HRSA Trauma-EMS Program has recently developed a mentoring program for trauma systems in different states. In this model, more fully developed trauma systems mentor systems in more basic stages of development. It would be useful to explore the strengths and weaknesses of this approach and consider its applicability to VA preparedness.

**8) Emphasize knowledge sharing and benchmarking with the private sector and other federal agencies, especially HRSA, CDC, and DoD, as well as with the private sector**

The preparedness challenges facing VA are shared by other agencies and organizations, and it would be prudent to proactively share insights and experience with these agencies and programs. VA has already established an Office for Health Policy Coordination to collaborate with HHS health programs, providing a valuable foundation on which to build. Examples of other agencies and programs that are particularly relevant are mentioned below.

The HRSA National Hospital Bioterrorism Preparedness Program is administered through state departments of health and is designed to help non-federal hospitals improve their preparedness. This program, and the states and hospitals it serves, face many of the same challenges as those facing VA. Challenges of training and education are particularly relevant, so common approaches and resources might be explored. VA has as much to offer as it has to learn (for instance, VA Decontamination Centers of Excellence represent a current best practice in decontamination training).

DoD and VA already collaborate in the production of distance learning materials. However, collaboration around more cutting edge learning technologies could be explored as both organizations face similar challenges identifying cost effective methods to provide ongoing training and role based assessment of competency for a large workforce.



**9) Refine this survey and re-administer to track progress; then compare with the AHRQ/HRSA survey of non-federal hospitals**

This VA survey, like all surveys, will require refinement over time. Experience and feedback from the field will inform nuances of wording and useful areas of inquiry. Refinements should be made while preserving consistency so that serial assessments can be made over time. Such assessments, rather than a single snapshot in time, provide the most valuable information.

As noted earlier the AHRQ/HRSA Civilian Hospital Survey was developed to assess the preparedness of non-federal hospitals. In January and February of 2005 approximately 2,500 non-federal hospitals responded to this survey, and the analysis should be complete in late spring 2005. Because the VA survey was based in large part on this non-federal hospital survey (with 26 identical primary questions), this provides an opportunity for VA to compare its preparedness status with these hospitals.

It is important to exert care when both the VA and AHRQ/HRSA surveys are refined so that a sufficient number of identical questions are preserved in order to maintain ongoing comparability. Close communication between the two survey workgroups (VA and AHRQ/HRSA) will facilitate coordinated refinement of each survey, and enhance the value of both.

**10) View preparedness as a dimension of quality and safety, and consider monitoring preparedness with existing internal and external reporting systems**

Preparedness, like quality, is a goal that is constantly pursued but never completely achieved. Also like quality, preparedness requires commitment and vigilance at every level of an organization so that a culture is created to support it. Adequately prepared staff and facilities are most likely to provide safe, high quality care under adverse conditions. To put preparedness and quality on an equal footing, VA might consider using some of the same systems to monitor them. Those systems include the VA's internal and external safety reporting systems (the VA National Center for Patient Safety Reporting and the National Aeronautics and Space Administration (NASA) Patient Safety Reporting System). These systems currently monitor adverse events and near misses in VA to improve quality. VA might consider using these anonymous systems to help monitor levels of facilities preparedness as well.



## Conclusions

This study shows that the VA has significant strengths as a community partner in preparedness. Particular strengths pertain to various elements of surge capacity and preparedness planning. This survey suggests that there are some opportunities for improvement. This should not be surprising since preparedness, like quality, is a goal that is never fully achieved. As preparedness objectives are met, new goals are often set in the struggle to defend ourselves from incidents of an undefined nature and severity at unexpected times and places.

The findings presented in this survey represent a snapshot of preparedness at a single point in time specifically in November and December 2004. A single survey cannot fully assess the preparedness of a particular VAMC or VISN, or of the entire system. This survey is a screening tool to help identify strengths and weaknesses and to help prioritize future inquiries, interventions, and resource allocation. Other sources of information should be used to augment and refine this assessment. Preparedness is not a definable end state but rather it is a process of continual improvement. Booz Allen hopes this assessment contributes to VA's goal of continually improving preparedness so that the VA can more effectively respond to events that threaten the country.



## APPENDICES

- Appendix 1 VA Reference Documents
- Appendix 2 Summary of VA Stakeholder Interviews
- Appendix 3 Expert Panel for Department of Health and Human Services Survey
- Appendix 4 VA All Hazards Preparedness Survey and Responses
- Appendix 5 Survey Assessment Parameters and Results
- Appendix 6 Communication History
- Appendix 7 Survey Installation and Configuration Guide
- Appendix 8 Scoring of Other Responses
- Appendix 9 Responding VA Medical Centers (VAMC) and Veterans Integrated Service Networks (VISN)
- Appendix 10 Employee Education Systems Emergency Preparedness Course Listing
- Appendix 11 Factors Predicting Preparedness
- Appendix 12 Glossary