Emergency Management Principles and Practices for Health Care Systems, 2nd edition

Unit 1:
The Emergency Management Program

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This educational curriculum was developed by The Institute for Crisis, Disaster and Risk Management (ICDRM) at The George Washington University (GWU) under contract to the Veterans Health Administration (VHA) and provides an update and revision of the 2006 version of the curriculum.

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Preface

This text, *Emergency Management Principles and Practices for Healthcare Systems, second edition* (2010), updates and revises the 2006 version of this text. The 2010 revisions were accomplished by the Institute for Crisis, Disaster and Risk Management (ICDRM) at The George Washington University, under contract to the Veterans Health Administration (VHA).[1] The contract requested: (1) The identification and validation of deployment competencies; and (2) An update of Emergency Management Principles and Practices for Health Care Systems text. While developed for the U.S. Department of Veterans Affairs, the content is applicable to all healthcare organizations.

The curriculum provides a **comprehensive approach to emergency management for all healthcare systems**. The authors recognize that the healthcare facilities operated by the Veterans Health Administration are components of a national, integrated healthcare system with some operational and management realities that differ from the average healthcare organization. Facilities operated by hospital chains, consortium facilities, for-profit organizations, and many other types of healthcare organizations also exist in the U.S. The authors believe that any uniqueness in any of these configurations is far surpassed by the many elements common to all healthcare systems, and that the concepts of comprehensive emergency management and the incident command system are important across all healthcare system settings. This curriculum, therefore, should be useful to any agency or organization involved with the delivery of healthcare services.

Central to the curriculum is the “management” element in emergency management, necessary for adequate organizational resiliency to continue healthcare services despite hazard impact and for the ability to achieve the needed medical surge for incident victims. This management expertise must be accomplished by healthcare organizations both as **individual resources** and as **integrated participants** in the larger emergency response community. To meet these needs and make the text nationally applicable, it is based upon foundational principles and practices of emergency management (EM). It also maintains a consistency with the major tenets of the National Incident Management System (NIMS), which includes the widely accepted Incident Command System (ICS) and Multiagency Coordination (MAC) System.

[1] The formal title of the contract is: “Supporting the VA Emergency Management Academy (EMA) through: (1) Identification and Validation of Deployment Competencies; and (2) Update of Emergency Management Principles and Practices for Health Care Systems” Contract No. 797-BT-9-014 Department of Veterans Affairs, OA&L/National Acquisition Center, Hines, IL.

Many healthcare personnel have learned about the Incident Command System through use of the Hospital Emergency Incident Command System (HEICS) or its successor, the revised Hospital Incident Command System (HICS). HICS presents primarily a standard ICS structure for healthcare organizations. The competencies and curriculum developed in this project will contribute to understanding the ***process* of incident management** by those using HICS, as well as provide the ***context*** for incorporating ICS into a fully customized Emergency Operations Plan by each specific healthcare organization. It extends beyond the incident response focus to describe an effective, comprehensive emergency management ***program*** for individual healthcare organizations.

The curriculum is framed by the concepts of Comprehensive Emergency Management[2,3] and its four phases: mitigation, preparedness, response and recovery. The inter-relationship between activities in these phases is demonstrated throughout the text, using systems-based principles from the science and practice of EM. The authors recognize that in the United States, the terrorist attacks of 9-11 prompted a revitalized focus of attention on EM at all levels of government and across the public and private sectors. Much forward progress has been accomplished. Some of the resulting efforts, however, involve new EM interpretations and extrapolations to fit the scenarios of mass terrorism and the needs of new departments, agencies, and nongovernmental enterprises. This has created novel "industry applications" of EM, with inconsistent terminology and concepts that vary significantly from EM's foundational concepts. In developing this text, the authors have adhered to longstanding, validated EM concepts, principles, and terminology. An extensive glossary is included for this purpose. Variations that have been prominently promulgated by governmental agencies and others as authoritative standards, as research products, or as prominent publications are noted and explained where appropriate.

ICS has been the accepted method for managing response and recovery activities within VHA and a growing number of other healthcare organizations over the past decade. Recent Presidential Directives[4] have reinforced this practice, mandating that the ICS presented in the NIMS be adapted as the management operating system for all governmental and

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[2] National Governor's Association. *Comprehensive Emergency Management: A Governor's Guide*. Center for Policy Research (NGA). Washington DC, 1979.
[3] Drabek TE, Hoetmer GJ (ed). *Emergency Management: Principles and Practice for Local Government*, (1991). International City Management Association, Washington DC; pp. 18, 134-137.
[4] Homeland Security Presidential Decision-5 (HSPD-5) *Management of Domestic Incidents* and HSPD-8 *National Preparedness*. Accessed March 3, 2010 at http://www.dhs.gov/xabout/laws/editorial_0607.shtm

non-governmental entities who may become involved in emergency response. NIMS/ICS is therefore the conceptual basis for the emergency response and recovery competencies in this curriculum, and NIMS heavily influences the overall EM Program as well. The authors strongly believe that an operational understanding of both the organizational structure of ICS and its functioning processes is critically important for healthcare system personnel, since ICS is the compelling platform upon which healthcare organizations can integrate as a full partner with community emergency response resources:

> "The *National Incident Management System* (NIMS) provides a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment." [5]

The widely disseminated versions of ICS currently available in the U.S., including that presented in NIMS, are based upon the wildland fire model from FIRESCOPE[6] which long preceded NIIMS.[7] Understanding and acceptance by the healthcare community of ICS concepts presented from wildland fire resources has historically been problematic. It is important to recognize, however, that NIMS intends ICS to be flexibly applied, as made clear in the following NIMS excerpt:

> "…… NIMS is based on the premise that utilization of a common incident management framework will give emergency management/response personnel a flexible but

[5] National Incident Management System (NIMS) (2008) *What is the National Incident Management System?* p. 2. Accessed March 3, 2010 at: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

[6] FIRESCOPE (**FI**refighting **RES**ources of **C**alifornia **O**rganized for **P**otential **E**mergencies) is a cooperative effort involving all agencies with fire fighting responsibilities in California. This organization developed ICS and defined its initial applications. Accessed March 3, 2010 at: http://www.firescope.org/

[7] National Interagency Incident Management System (NIIMS), under the U.S. Department of Agriculture/ Forest Service, is "a system for responding to a wide range of emergencies… NIIMS includes five major subsystems, which together provide a comprehensive approach to incident management. The subsystems and their functions include: 1) Incident Command System (ICS): an on-scene structure of management-level positions suitable for managing any incident…." US Department of Agriculture. *NIIMS Operations.* US Forest Service; accessed May 30, 2006. no longer Web available.

> standardized system for emergency management and incident response activities."[8]

This document is an example of the flexible application of NIMS/ICS, with the adaptation intended to ease understanding and therefore promote full use of ICS by healthcare personnel. This includes conforming to the "management rather than command" tradition in healthcare systems. At the same time, care has been taken to adhere closely to NIMS terminology and process descriptions when presenting the healthcare system ICS. Where deviations occur, the authors demonstrate these as flexible interpretations that remain consistent with NIMS/ICS concepts and principles.

As requested by the VHA during project development, the authors have incorporated concepts of applied incident management from their past research and publication efforts, including Medical and Health Incident Management (MaHIM) System,[9] Medical Surge Capacity and Capability (MSCC)[10] and a hospital emergency management handbook.[11] The ICS-based tiered strategy in MSCC that can coordinate the local, State, regional, Federal, and non-governmental healthcare resources during emergency response and recovery has now been adopted into the Department of Health and Human Services (DHHS) guidance for the national Hospital Preparedness Program.[12] In addition, VHA's internal *Emergency Management Program Guidebook*,[13] an extensive compendium of emergency management tools, guides and processes, is

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[8] National Incident Management System (NIMS) (2008). Introduction and Overview. p. 6. Accessed March 3, 2010 at: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

[9] Barbera J.A., Macintyre A.G. Medical and Health Incident Management System: A Comprehensive Functional System Description for Mass Casualty Medical Incident Management. Institute for Crisis, Disaster, and Risk Management, George Washington University. A report for the Alfred P Sloan Foundation (December 2002), accessed February 15, 2010 at: http://www.gwu.edu/~icdrm/

[10] Barbera J.A., Macintyre A.G. (Knebel A, Trabert E, eds). *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources during Large-Scale Emergencies.* CNA Corporation under contract to the U.S. Department of Health and Human Services, (Second Edition, September 2007); accessed February 15, 2010 at: http://www.hhs.gov/disasters/discussion/planners/mscc/index.html

[11] Barbera JA, Macintyre AG. *Jane's Hospital Mass Casualty Handbook: Hospital Emergency Preparedness and Response*. Jane's Information Group, availability accessed May 27, 2010 at http://catalog.janes.com/catalog/public/index.cfm?fuseaction=home.ProductInfoBrief&product_id=98410

[12] US Department of Health and Human Services. *Hospital Preparedness Program*, Assistant Secretary for Preparedness and Response, Office of Preparedness and Emergency Operations, accessed December 17, 2009 at: http://www.hhs.gov/aspr/opeo/hpp/

[13] *VHA Emergency Management Program Guidebook*, 2009, Accessed March 3, 2010 at: http://www.publichealth.va.gov/emergencymanagement/reference_materials/index.asp#handbooks

cited as examples of applied EM practices throughout the text. The authors have endeavored to present concepts and principles from the user perspective: describing the organizational structure, management processes, and relevant knowledge, skills and abilities necessary for effective response and recovery. The use of the ICS construct, principles, and processes is extended beyond the tactical "scene" management described in NIMS, and presented as methodology to coordinate strategically across disciplines, jurisdictions, levels of government, and the public-private interface.

As noted above, a critical concept presented in this text is the use of competencies, or the description of skills, knowledge, and abilities that are measurable and demonstrable on the job and needed by personnel to respond effectively and efficiently. Initial work by ICDRM for this project established response and recovery competencies for specific job groups within a healthcare system. The categories are "all employees" or core competencies, "patient care providers," "facility leaders,' and "emergency program managers".[14] These are presented in an appendix to this compendium. Competency-based instructional materials are increasingly recognized as relevant and important to EM, as they provide a formal approach to establishing adequate preparedness of an organization's personnel. In fact, in well run EM systems, "certification" is increasingly used to indicate qualification for a specific response position, demonstrating that an individual possesses the defined competencies for that position. The competency products provided in this compendium serve as groundwork for certification in healthcare emergency response and recovery.

The text is not intended to be directly applied as educational or training material for every worker in a healthcare system. Its length and level of detail prohibit this. Instead, it serves as an educational and reference manual for emergency program managers that are developing and conducting their organization's EM program. In this manner, the text may be used as a reference for developing and implementing the program itself, for developing education and training, for planning and conducting exercises, for program evaluation, for after-action performance-based assessment of the healthcare system EOP during exercises or actual emergencies and disasters, and for achieving lasting program improvement through organizational learning.

The text is organized into four units with subsections entitled modules. Each module is composed of specific lessons with accompanying

[14] Barbera JA, Macintyre AG, Shaw G, Seefried S, Westerman L, DeCosmo S. Unit 5. *VHA-EMA Emergency Response and Recovery Competencies: Competency Survey, Analysis, and Report*. Accessed March 3, 2010 at: : http://www.gwu.edu/~icdrm/publications/index.html

objectives. A fifth unit contains the appendices, which include the extensive glossary of emergency management terms, a list of acronyms, and the competency material described above. A summary of the units follows:

- Unit 1, "The Emergency Management Program for Healthcare Systems" outlines the broad scope of successful emergency management (EM) for healthcare facilities. The foundational concepts, long-standing EM principles, and guiding documents for emergency management and incident management are reviewed and their application to healthcare systems presented. Healthcare personnel, particularly clinicians, have commonly thought of their primary goal in emergencies and disasters as the ability to provide "surge" (used in the traditional sense, this refers to the ability to care for increased numbers of patients). In this Unit, this EM goal for healthcare systems is balanced with the goal of organizational resiliency. Resiliency is a term more often used in business communities and refers to the abilities of an organization to maintain its usual output of products and services. In this curriculum, resiliency refers to ensuring continuity of patient care services and certain business operations necessary to adequately provide for the safety of patients, visitors and staff and for medical surge. Surge is further delineated in this text as both surge capacity (increased numbers of patients) and surge capability (caring for patients with unique requirements such as infected and contagious patients).

  Unit 1 also outlines the specific attributes of a successful healthcare system EM program. The construct of an emergency management committee as well as the characteristics of an emergency program manager are discussed. Relevant material is presented on how this EM program addresses organizational goals and missions as well as how it interfaces with the day-to-day management of the organization. The program's activities are discussed in relation to the four phases of Comprehensive Emergency Management (mitigation, preparedness, response, and recovery). Foundation concepts from both social sciences and management research are presented. The central activity of conducting a Hazards Vulnerability Analysis (HVA) is discussed in detail. The unit provides an HVA methodology that develops hazard and vulnerability information that can be applied with tangible benefits across the entire EM program. Mitigation and preparedness actions based upon the HVA are introduced and discussed. A suggested format is presented for the Emergency Operations Plan (EOP). The EOP provides organization-wide guidance for response and recovery actions, as well as serving as the guiding document for addressing the full range of critical preparedness activities. EOP implementation is discussed, including resource acquisition and comprehensive instruction. This unit includes a discussion of resource management and supports the use of competencies as a basis for education, training and evaluation.

- Unit 2, "Incident Command System (ICS), Multiagency Coordination Systems (MACS) and the Application of Strategic NIMS Principles" lays the management foundation for healthcare system emergency response and recovery. The traditional concepts and principles of ICS are outlined in a manner that directly relates to healthcare systems. The organizational structure presented by ICS and MACS (and consistent with NIMS) is explained. The inherent flexibility emphasized by the original designers of ICS has been incorporated, differentiating this text from many other educational materials that present ICS as a rigid format. Important ICS methodologies, procedures, and processes are presented, including management by objective. The critical role of incident action planning, how it is performed and what it entails is discussed. Finally, this unit presents ICS and MACS principles applied in a context that guides effective integration of an individual healthcare organization into the overall response: within a local community, a State, an inter-state region, and the Federal government response.

- Unit 3, "Healthcare System Emergency Response and Recovery," provides more specific and tailored instruction on the use of the EOP. This Unit demonstrates how ICS becomes incorporated into the organization-specific EOP tool that guides preparedness for, response to, and recovery from all hazards. A candidate organizational structure for the healthcare system operations section is suggested. Included in this discussion are the types of tools that the system may wish to develop to further enhance response and recovery performance (e.g., ICS forms adapted for healthcare systems). Specific ICS functions are also detailed, but with the necessary adaptations for healthcare organizations. An extensive Concept of Operations (CONOPS) is presented that highlights important considerations that must be addressed through the successive stages of an incident. These stages range from initial incident recognition to demobilization and transition to recovery. Important considerations for managing the recovery of the organization are presented, utilizing ICS principles within the EOP. Finally, how to address and incorporate function, support, and hazard-specific issues into response and recovery actions are outlined.

- Unit 4, “Emergency Management System Evaluation and Organizational Learning for Healthcare Systems” completes the overall EM program with an in-depth examination of important activities related to system implementation, evaluation, and improvement. Concepts important to exercising the EOP and evaluating the EM program are extensively developed. The text then emphasizes a process that establishes lasting improvement to the EOP or the EM program itself, based upon the evaluation findings. This “organizational learning” process, where the organization is the focus of the “learning,” is differentiated from the usual “lessons learned” directed primarily at individual participants in emergency response or recovery activities.

Where possible, the complex material in this text is presented with outlines, template steps, and examples to assist with understanding and incorporating the valid EM concepts into the EM practices of healthcare organizations.

Many of the major revisions to the first edition are based upon authoritative documents promulgated since 2006. A partial listing of recent documents addressed in the 2010 version follows.

- The Fiscal Year 2008 and 2009 NIMS Implementation Objectives for Healthcare Organizations. Developed by the Incident Management Systems Integration (IMSI) Division of the Department of Homeland Security (DHS), in collaboration with the U.S. Department of Health and Human Services (HHS).

- The revised Nine-Step Comprehensive Emergency Management Program Development Process as detailed in the Department of Veterans Affairs Emergency Management Guidebook (2009).

- The 2009 revision of The Joint Commission (TJC) Standards, effective January 1, 2009, which created a stand-alone chapter for the Emergency Management (EM) standards.

- The January 2008 National Response Framework (NRF) which superseded the National Response Plan (NRP) (2004).

- The December 2008 National Incident Management System, which supersedes the original March 2004 version.

- The 2009 National Infrastructure Protection Plan which replaces the 2006 version and reflects changes and updates to program elements and concepts. The revised NIPP integrates the concepts of resiliency and protection, and broadens the focus of NIPP-related programs and activities to an all-hazards environment.

- The 2010 edition of NFPA 1600 *Standard on Disaster/Emergency Management and Business Continuity Programs* which replaces the 2007 edition and has expanded the emphasis of the importance of leadership and commitment; includes new requirements for defining performance objectives; and includes new requirements for records management. Most notably, the 2010 edition reorders the 16 program elements of the 2007 edition into the categories of planning, implementation, testing and exercises, and program improvement. This ordering follows a typical program development process and is consistent with "plan, do, check, act" or continuous improvement processes.

- The continuing refinement of the Homeland Security Exercise and Evaluation Program (HSEEP), a capabilities and performance-based exercise program that provides a standardized methodology and terminology for exercise design, development, conduct, evaluation, and improvement planning.

- The 2007 VHA "Capability Assessment Program" which integrates all existing external and VHA emergency management-related standards and doctrine into one formative evaluation methodology.

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Unit 1.

The Emergency Management Program for Healthcare Systems

<u>Unit Summary</u>

This unit defines the core concepts of medical system resiliency, medical surge capacity, medical surge capability, and the healthcare emergency management elements necessary to achieve and sustain them. The unit presents an overview of the importance of effective emergency management, the foundational principles that must be recognized, and validated practices for the development and conduct of a comprehensive emergency management program.

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Module 1.1

Introduction to Emergency Management for Healthcare Systems

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Lesson 1.1.1 The Need for Medical Surge and Medical System Continuity

Lesson objectives

- *List major emergencies and disasters, evolving threats and other recognized hazards over the past decade that have promoted attention to emergency management for healthcare systems.*
- *List the four major categories of response activities for healthcare organizations*
- *Define mass casualty and mass effect incidents and list their general characteristics.*
- *List important concepts that promote an established emergency management process for managing healthcare organization response activities.*

Introduction

The attacks of September 11th 2001, followed shortly by the anthrax dissemination incident in Florida, the National Capital Region, and the New York metropolitan area (often referred to as Amerithrax), confirmed that the United States faces a true threat of intentional mass casualty[15] incidents caused by terrorism. Severe Acute Respiratory Syndrome (SARS),[16] a re-examination of the 1918 Spanish Flu,[17] and the currently evolving H1N1 influenza all emphasize the equally concerning threat from naturally occurring contagion. Recent experience from hurricanes and other extreme weather incidents (floods, tornados), and technological hazard incidents across the U.S., have added to the recognition that as a system, U.S. healthcare organizations must be prepared, resourced, and organized to respond to hazard impacts, regardless of their location. The diversity of potential hazard impacts may affect these systems in a multitude of ways that must be acknowledged and addressed by healthcare emergency managers.

Traditional healthcare planning has focused on "mass casualty incidents" (see terminology textbox).

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[15] "Casualty" refers to **any human accessing health or medical services, including mental health** services and medical forensics/mortuary care (for fatalities), as a result of a hazard impact.

[16] Centers for Disease Control and Prevention. *Severe Acute Respiratory Syndrome (SARS): Basic Information about SARS* (2005), accessed February 15, 2010 at: http://www.cdc.gov/ncidod/sars/factsheet.htm

[17] Tumpey T.M., Basler C.F., Aguilar P.V. *Characterization of the Reconstructed 1918 Spanish Influenza Pandemic Virus.* Science (October 7, 2005), Vol. 310. no. 5745, pp. 77 – 80.

Specific terminology is very important in any professional discipline. The acronym "MCI" has different meanings, including Mass Casualty Incident and Multiple Casualty Incident. These are very different situations.

Terminology alert!

***Mass casualty incident*: A casualty-creating hazard impact in which the available organizational and medical resources, or their management systems, are severely challenged or become insufficient to adequately meet the medical needs of the affected population. Insufficient management, resources, or support can result in increased morbidity and mortality among the impacted population. "Mass casualty incident" equates to a "disaster," whereas "multiple casualty incident" equates to an "emergency."**

Hurricane Katrina[18] and other relatively recent weather events (Houston floods of 2001,[19] severe ice storms, and others) have demonstrated the "mass effect" of hazards that can catastrophically disrupt the usual healthcare system operations. Borrowing from contemporary terminology, these may be described as "mass effect incidents" (see terminology textbox) to differentiate them from a primarily mass casualty incident. Of course, some hazard impacts, such as earthquakes, may create both mass casualties and mass effect.

Terminology alert!

Mass effect incident: A hazard impact that primarily affects the ability of the organization to continue its usual operations (in contrast to a mass casualty incident). For healthcare systems, the usual medical care capability and capacity can be compromised.

Local medical and health assets constitute the primary response

Examination of healthcare system response during mass casualty and mass effect incidents in the United States demonstrates multiple recurrent findings:

- Local response is primary: The initial response to any medical incident

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[18] *The Federal Response to Hurricane Katrina: Lessons Learned* (2006); accessed December 3, 2009 at: http://georgewbush-whitehouse.archives.gov/reports/katrina-lessons-learned/letter.htmlhttp://georgewbush-whitehouse.archives.gov/reports/katrina-lessons-learned/letter.html.

[19] Parson, E. 1,000 Year Flood Paralyzes Texas Medical Center. EC&M Newsletter. September 26, 2002. Accessed December 3, 2009 at: http://ecmweb.com/news/electric_natural_disasters/

will be almost entirely based upon locally available health and medical organizations.

- Medical response is complex: The response to a mass casualty incident impacts an entire community and involves numerous diverse medical and public health entities, including healthcare systems and facilities, public health departments, emergency medical services, medical laboratories, individual healthcare practitioners, and medical support services. Similarly, mass effect incidents can also involve response efforts from a wide range of professional organizations.

Effective healthcare response during disasters is very complex

- Coordinated, multi-disciplinary response is essential: Effective healthcare system response to a major incident usually requires support from and integration with public safety agencies and other response entities that aren't normally partnered with healthcare systems during everyday operations.

- Bridging the "public-private divide": Healthcare organizations have traditionally planned and responded to emergencies as individual entities. This has occurred in part because of legal, financial, and logistical issues in planning and coordination between public agencies and primarily private healthcare resources (the "public-private divide"). Healthcare organizations have only recently begun to view themselves as an integrated component of a larger response system.

The integration of the Healthcare System with the larger response community has been and remains a significant challenge.

- Public health as an essential partner: Public health departments have not traditionally been well integrated with other community emergency response operations, including the acute care medical and mental health communities (especially for non-infectious disease incidents). The past decade has demonstrated that public health should be recognized as an essential partner for successful management of mass casualty or mass effect healthcare response.

- The need for robust information processing: Medical issues in large-scale incidents are rarely immediately clear, and complex information must be collected from disparate sources, processed and analyzed rapidly in order to determine the most appropriate course of action. This requires a robust information management process that may differ markedly from any used in everyday healthcare system operations. It cannot be constructed "on the fly" as an emergency evolves.

- The need for effective overall management: Medical response to mass casualty incidents can be exceedingly complex, with many seemingly diverse tasks. Responsibility for each of these actions can vary significantly among organizations in different communities. Even

Traditional approaches to Healthcare System preparedness have focused upon specific (usually tactical) issues as opposed to broader management challenges.

within a single healthcare system, actions must be accomplished that require coordination between disparate operating units that don't work together on a regular basis or under the stress of response. Despite these challenges, all necessary functions must be adequately addressed for a successful mass casualty or mass effect response.

- <u>Concomitant medical surge and medical system resiliency</u>: A major hazard impact that creates the need for medical surge capacity and capability also is likely to impact the normal function of everyday healthcare systems (i.e., some degree of mass effect). Medical system resiliency is necessary for the system to maintain its usual effectiveness and, at the same time, to provide a reliably functioning platform upon which medical surge can be accomplished. Medical system resiliency is achieved by a combination of mitigation measures and adequate emergency preparedness, assuring continuity of healthcare system operations despite the hazard impact.

The traditional approach to mass casualty incident preparedness has focused almost exclusively upon individual issues and problems such as the number of ventilators, surge space, and interoperable communications. Much of this has been conducted under a narrowly focused "disaster committee" or a "disaster medicine" initiative. The following problems indicate that the usual disaster medicine orientation should be carefully re-examined and revised.

- <u>Stove-piped planning within healthcare disciplines</u>: There are multiple disciplines necessary to maintain today's healthcare systems during emergencies and disasters. "Disaster Medicine" has evolved primarily with a clinical (and physician) focus.[20] Other critical disciplines include healthcare engineering (e.g. maintenance of infrastructure such as utilities, medical gases, HVAC etc.), healthcare system administration (e.g. regulatory compliance), and security (e.g. perimeter control). While this "stove piping" has recently improved, balanced, robust emergency management programs with committed participants from all important healthcare disciplines remain less common than desired.

- <u>Individual and isolated planning</u>: Even within healthcare disciplines, individual issues are often addressed in isolation from each other. For example, disease surveillance, patient tracking, rapid laboratory diagnostics, availability of medications and immunizations, trauma triage, altered standards of care and many other identified issues are commonly addressed individually, but in reality must be well integrated

[20] Macintyre, A, Barbera J, Brewster P. Health Care Emergency Management: Establishing the Science of Managing Mass Casualty and Mass Effect Incidents. Disaster Med Public Health Preparedness. June 2009 v. 3, p. S45-S51

into a larger management system. This complicates achievement of adequate preparedness for future mass casualty, unusual casualty or mass effect incidents.

- Misunderstanding the response situation: As noted above, a common focus for medical planners has been on individual resource deficiencies that are anticipated in future mass casualty incidents. Many of the initiatives to address them do not start by developing a valid understanding of the context, or environment, of emergency response, with the uncertainty, urgency, and incomplete information that is different from the everyday workplace environment. This emergency context can be understood and addressed through careful attention to the planning assumptions, and then incorporating the assumptions into preparedness planning. For example, response resources must be rapidly mobilized and function under hectic conditions, sketchy information, unreliable communications, and other realities of extreme incidents. The individual resource deficiencies are better understood when examined in relationship to this emergency response environment.

Few <u>management systems</u> have been described for integrating the various health and medical resources during emergency response and recovery.

Addressing these and other common issues requires new considerations.

- Collective planning to replace the isolated approach: Careful examination of the vexing issues in incident response suggests that they may be more effectively solved through:
  - **Processes that involve all important disciplines within an organization**.
  - **Processes that involve many diverse organizations**, rather than addressing issues in isolation by individual enterprises.

  These approaches can only be accomplished through a comprehensive management structure and function.

- Preparedness versus response organizations: Most preparedness planning for emergencies and disasters takes place utilizing everyday processes and procedures (i.e. "preparedness organizations" as defined by NIMS).[21] These include committees, workgroups, and other deliberative, bureaucratic configurations. From the outset of any incident, however, organizational management, decision-making, and information management must occur rapidly, often with insufficient information and other uncertainties. Iterative, narrower scoped decision-making cycles replace the deliberative process. A response organization operated according to appropriate principles for this context (e.g. Incident Command System) must therefore be

[21] United States Department of Homeland Security. *National Incident Management System (NIMS 2008), Glossary of Key Terms*, p. 145; accessed February 15, 2010 at: http://www.fema.gov/emergency/nims/

immediately available, so that the usual preparedness management processes are not used.

- Models for conducting comprehensive incident management: Understanding a comprehensive health and medical management system for major emergencies has been problematic. Until very recently, few published mass casualty response plans, or response standards, existed as examples of **how to organize all health and medical response within a given jurisdiction.** Additionally, few published medical and health plans provide uniform management of response, including integration across jurisdictional lines, levels of government, and between the public and private sector. Other than the Medical and Health Incident Management (MaHIM) System,[22] and Medical Surge Capacity and Capability (MSCC),[23] few conceptual models exist that describe:
  - A comprehensive approach to managing the full range of health and medical assets during mass effect or mass casualty incidents.
  - Methods to manage coordination across intergovernmental, inter-jurisdictional, and public-private boundaries. These must be designed to effectively bridge across independent and otherwise sovereign organizations.

In many locations, medical resources that were available for response have been eliminated or reduced in size and number. This argues for a more effective means of integrating what is available at the time of a response.

The Veterans Health Administration (VHA) operates hospitals and outpatient clinics across the United States. Though focused upon a specific patient population, each has the potential to serve as an integral element or key resource for their respective community's emergency response. They are also resources that are called upon to support emergency response at the national level. VHA therefore recognizes the importance of an educational curriculum that explains the principles, core concepts and valid practices behind developing and implementing emergency management programs for health and medical service delivery systems. **Though this educational curriculum was developed for VHA, it was at VHA's explicit direction written to be applicable to all healthcare systems in the United States.**

[22] Barbera J.A., Macintyre A.G. *Medical and Health Incident Management System: A Comprehensive Functional System Description for Mass Casualty Medical Incident Management.* Institute for Crisis, Disaster, and Risk Management, George Washington University. A report for the Alfred P Sloan Foundation (December 2002), accessed February 15, 2010 at: http://www.gwu.edu/~icdrm/

[23] Barbera J.A., Macintyre A.G. *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources during Large-Scale Emergencies.* CNA Corporation under contract to the U.S. Department of Health and Human Services, September 2007; accessed February 15, 2010 at: http://www.hhs.gov/disasters/discussion/planners/mscc/index.html

With few exceptions the majority of Federal, State, and local preparedness programs have only recently, within the past decade, begun to place visible priority on establishing these comprehensive health and medical emergency management systems.

The effects of this void are exacerbated by the negative impact of the economic and political decisions that influence everyday capacity and capabilities in existing healthcare systems.[24,25] Hospital and emergency department closures, a shrinking base of community-based health centers, and workforce problems, such as the national nursing shortage are troublesome signs at a time when the perceived mass casualty risk is increasing.

At the same time, it must be recognized that many high-quality, relatively independent medical and health resources continue to exist in communities across the U.S. History has demonstrated that in mass casualty or other healthcare crises, healthcare personnel will generally respond and earnestly work towards addressing the perceived medical needs.

To overcome these deficiencies and maximize the positive interventions of the disparate medical assets in a rapid, effective, and community-wide manner, a well-defined and developed mass casualty response system must be established. Within this response system, the otherwise independent components: healthcare facilities, healthcare systems, individual practitioners, clinical laboratories, and others, must be prepared with a management ability to optimally respond individually and at the same time participate effectively in the organized community-wide response. This text presents the nationally accepted methods for achieving this management target – the Incident Command System (ICS) and Multiagency Coordination Systems (MACS) – and how their structure and processes are applied in the healthcare system setting and to the larger response. It also presents a comprehensive discussion of emergency management principles and core concepts for healthcare systems with the goal of establishing the prerequisites for optimal performance during emergencies and disasters.

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[24] Barbera, J. A., Macintyre, A.G., DeAtley, C.A. *Ambulances to Nowhere: America's Critical Shortfall in Medical Preparedness for Catastrophic Terrorism* (October 2001). BCSIA Discussion Paper 2001-15, ESDP Discussion Paper ESDP-2001-07, John F. Kennedy School of Government, Harvard University; accessed February 15, 2010 at: http://belfercenter.ksg.harvard.edu/publication/2788/ambulances_to_nowhere.html ,
[25] American College of Emergency Physicians (ACEP). *The National Report Card on the State of Emergency Medicine: Evaluating the Environment of Emergency Care Systems State by State* (2009 edition); accessed February 15, 2010 at: http://www.emreportcard.org/uploadedFiles/ACEP-ReportCard-10-22-08.pdf.pdf

The four major emergency response issues confronting Healthcare Systems are continuity of regular operations (Resiliency), caring for new, incident-related patients (Medical Surge), occupant emergency procedures, and support provided to external requirements.

The myriad issues that a healthcare system faces during a major emergency may be grouped into four broad categories of emergency response and recovery capabilities:

- **Protection and security.** All actions to address protection and security issues such as evacuation or sheltering in place and other occupant emergency procedures.
- **Continuity of operations.** Actions to maintain usual patient care services and business practices to achieve organizational resiliency.
- **Health and Medical surge.** Actions that provides medical surge capacity and capability to meet the incident-specific medical and psychological needs of the affected population.
- **Support to external requirements.** Actions to meet the organization's commitments to community response as agreed to by the organization or required by the incident specific parameters.

A brief description of each follows with more detail provided later in this text.

Continuity of Operations and Medical System Resiliency

The effects of any hazard may severely impact the healthcare system itself, creating the "mass effect" discussed earlier. This creates the potential to disrupt normal medical care delivery, at the same time that an increase in general or specialized services is urgently needed.

- Organizational resiliency: The ability for the organization to optimally survive an incident of mass effect is best described by the concept of "organizational resiliency" (see terminology textbox). For healthcare systems, this is "healthcare system resiliency." The term resiliency has become a new "buzz word" in the domain of terrorism preparedness, but is equally applicable to all hazards preparedness and can be considered as a goal for the long standing phases and process of Comprehensive Emergency Management (defined and described in Lesson 1.1.2)

Terminology alert!

Resiliency refers to the ability of an individual human or an organization to quickly recover from change or misfortune. It is commonly thought of as "buoyancy" and an ability to "bounce back."[26] The Department of Homeland Security Risk Lexicon document published in September 2008 provides a level of granularity to this definition by defining resilience as the "ability to resist, absorb, recover from or successfully adapt to adversity or a change in conditions."[27]

The regular day-to-day services that Healthcare Systems provide to communities are critical and it is imperative to try to maintain these during emergency response and recovery.

- Importance of maintaining healthcare system operations: While some elective and less-than-urgent medical services can be postponed or transferred to alternate locations, the majority of everyday patient care services must continue uninterrupted to avoid a significantly adverse impact on the normal patient population. Examples of the range of services that have severe consequences if disrupted include:
  - Inpatient and outpatient dialysis.
  - Urgent and emergent cardiac care services (cardiac catheterizations and interventional services, such as coronary bypass or angioplasty and stent placement).
  - Inpatient care for the severely infected (with regular community acquired infections).
  - Trauma resuscitation and care (non-incident related).
  - Clinic and office visits (medical and psychiatric) as follow-up to recent hospital discharge.
  - Access to and/or distribution of pharmaceuticals.
- Continuity of operations planning: To address this need to maintain service, the healthcare system's EM program must include effective continuity planning, for both business and service/product operations. This will both "harden" the organization against hazard impact and prepare the organization to manage any impact as it occurs.

[26] Adapted from Conner, Daryl R. *Managing at the Speed of Change: How Resilient Managers Succeed and Prosper Where Others Fail* (1995). New York: Villard Books.
[27] United States Department of Homeland Security. *DHS Risk Lexicon*. (2008). Washington, DC; accessed February 15, 2010 at: http://www.dhs.gov/xlibrary/assets/dhs_risk_lexicon.pdf

"Resiliency" should therefore be viewed as a goal – the processes to achieve this are commonly encompassed by "continuity planning" (see terminology textbox).

Terminology alert!

Continuity Planning: An internal effort within an organization to assure that the capability exists to continue essential business and service functions across a wide range of potential emergencies, including localized acts of nature, accidents, and technological and/or attack/terrorist-related emergencies. Accordingly, an effective Emergency Management Program for healthcare systems not only addresses the four phases of mitigation, preparedness, response, and recovery, but also includes continuity planning activities to ensure that critical patient care, ancillary; and support functions would continue with little or no interruption.[28]

- Impact primarily on business operations: Some hazard impacts may generate very few actual casualties but may produce very disruptive effects on the healthcare system's normal function.[29] These mass effect incidents commonly involve information systems, resource shortages, and other problems that compromise the business operations of a healthcare facility. Continuity planning should address this type of hazard as well as those more directly affecting patient care. This focus is commonly referred to as ''business continuity", a term with widespread acceptance in the private sector which shares multiple goals and practices with public sector continuity of operations.

Incidents that generate patients may challenge Healthcare Systems through an increase in volume (capacity) or through the presentation of patients with unusual or specific care requirements (capability).

Medical Surge

- The concept of **medical surge** is the second category of emergency response and recovery capabilities, and is particularly important for incidents with mass casualties and/or casualties with unusual medical conditions. It is important, therefore, to define this term before analyzing solutions for the overall needs of mass casualty or complex

[28] U.S. Department of Veterans Affairs. *Emergency Management Program Guidebook.* 2009, Page 13-5. Washington, D.C.

[29] Associated Press. L.A. *Hospital Computer System Breaks Down* (4/22/03), accessed April 25, 2003. No longer available through an Internet link.

incidents. [30]

- **Medical surge** is the ability to provide adequate[31] medical evaluation and care in situations that severely challenge or exceed the limits of the normal medical infrastructure of an affected community.[32] Despite this simple explanation, medical surge is an extraordinarily complex topic that is important to understand in order to prepare. The first step in doing so is to distinguish surge capacity from surge capability (see terminology textbox). An example of surge capability is provided in Textbox 1.1.1.1.

Terminology alert!

Medical Surge Capacity**:** The ability to evaluate and care for a markedly increased volume of patients—one that challenges or exceeds normal operating capacity. The surge requirements may extend beyond direct patient care to include such tasks as extensive laboratory studies or epidemiological investigations.

Medical Surge Capability**:** The ability to manage patients requiring unusual or very specialized medical evaluation and care. Surge requirements span the range of specialized medical and health services (expertise, information, procedures, equipment, or personnel) that are not normally available at the location where they are needed (e.g., pediatric care provided at non-pediatric facilities or burn care services at a non-burn center). Surge capability also includes patient problems that require special intervention to protect medical providers, other patients, and the integrity of the medical care facility.

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[30] Barbera J.A., Macintyre A.G. *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources during Large-Scale Emergencies.* CNA Corporation under contract to the U.S. Department of Health and Human Services, September 2007; accessed February 15, 2010 at: http://www.hhs.gov/disasters/discussion/planners/mscc/index.html

[31] In this text, the term "adequate" means: An adjective that denotes the quality or quantity of a system, process, procedure, or resource that will achieve the relevant incident response objective.

[32] Barbera J.A., Macintyre A.G. *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources during Large-Scale Emergencies.* CNA Corporation under contract to the U.S. Department of Health and Human Services, September 2007; accessed February 15, 2010 at: http://www.hhs.gov/disasters/discussion/planners/mscc/index.html.

Textbox 1.1.1.1

Medical Surge Capability: An Example

Many healthcare facilities encountered difficulties with the arrival of patients with symptoms of severe acute respiratory syndrome (SARS). The challenge was not presented by a high volume of patients, but rather by the specialty requirements of caring for a few patients with a highly contagious illness that demonstrated particular transmissibility in the healthcare setting. Protection of staff and other patients was a high priority, as was screening incoming patients for illness, preventing undue concerns among staff, and avoiding publicity that could adversely affect the hospital's business. Coordination with public health, emergency management, and other response assets was critical. Pre-established incident management processes are designed to facilitate this type of problem-solving experience.

Protection and Security

The effects of hazard impact on a healthcare organization may be drastic and can require measures to protect patients, staff, and visitors within the facility itself. These measures, typically related to evacuation, sheltering in place, accounting for personnel or other protective measures are of such extreme importance that they can be considered a separate category of emergency response and recovery capabilities for healthcare systems. Occupant Emergency Procedures are created as the result of this planning that addresses these critical protection and security issues (see terminology textbox).

Terminology alert!

Occupant Emergency Procedures: Pre-planned steps to be followed to protect facility occupants when hazard impact presents an immediate life-safety threat. Organizational activities typically focus on evacuation or sheltering in place and accounting for personnel and should include both initial reactive steps as well as more pro-active processes.

The unique population of individuals typically housed within a healthcare organization, including patients, staff, visitors, and outside contractors, makes this particular category of activities incredibly challenging to address. In many situations, the end-result is the movement of all or part of the patient and staff population. The safe and efficient evacuation of a place of business or a school alone can present significant challenges. When addressing movement requirements for medically fragile patients dependent upon uninterrupted medical support, the challenges expand exponentially. Accountability for all patients, visitors and staff, safe physical movement of non-ambulatory individuals, physical movement of the critically ill, and supporting alternate care sites and staging areas all present significant issues for the healthcare organization.

Support to External Requirements

In some situations after hazard impact, a healthcare organization may be requested (or pre-committed) to provide support to an external organization or activities outside the specific domain of the healthcare organization. This activity may be very different from everyday healthcare services and involve the management of unusual integration or coordination activities necessary to fulfill the support requirements. Examples include providing personnel or other resources to support the needs of an external, independent healthcare organization with critical medical needs, or supporting first responder personnel for an unusual HAZMAT response. The considerations inherent to such activities may be very different in nature from the other three emergency response and recovery capability categories described above, yet may need to be managed and conducted concurrently.

These emergency support activities are best executed if pre-planned to address process and procedures for requesting, dispatching, receiving and otherwise managing the external support.

Key Management Strategies to Achieve Healthcare Organization Emergency Response and Recovery Capabilities

To prepare for, effectively manage and efficiently conduct the activities across the four above-described capabilities, the organization's emergency management personnel must maintain operations, be prepared for any indicated occupant emergency procedures, achieve the needed medical surge, provide support for external requirements and have the immediate ability and availability to direct appropriate organizational focus upon critical system needs within the healthcare system.

- <u>Effective management methodology across all emergency management activities</u>: As noted, emergency management encompasses a wide range of seemingly disparate activities. These are grouped appropriately according to their functional similarities (mitigation versus preparedness versus emergency response and recovery) and managed accordingly. Using appropriate management methods for each grouping, including standardized templates and processes, will promote efficiency in managing the activities as well as assure consistency in terminology and concepts. It will also demonstrate integration of all emergency-related tasks across the organization, potentially strengthening support for this initiative. Management methods are therefore discussed extensively throughout this text.

- Appropriate distribution of responsibility and authority: To maintain safety, quality and adequacy of services in the face of stress, the organization must be capable of coordinating the re-distribution of authority and responsibility throughout the organization. The objective is that tasks can still be performed by the most appropriate personnel in the most appropriate locations while striving to maintain the quality parameters set by the organization, but in greater quantity or under the unusual situations of the emergency. This is in reality a relatively simple concept if personnel across the system understand and buy into it. To accomplish this, however, careful attention to preparedness planning, training and resource management is required. For example, to meet patient surge capacity for a large number of victims arriving at a healthcare facility, the best site to provide quality emergency evaluation and treatment is in the Emergency Department (ED). This requires that the emergency department rapidly transforms for a maximal capacity. Other patient treatment wards can participate in achieving adequate surge capacity by rapidly accepting partially evaluated patients already in the ED, particularly patients who are considered stable but awaiting completion of their admission evaluation. The inpatient services can complete the evaluations and follow-on treatments without change in quality of care and allow the ED to focus upon the large number of incoming casualties

"Engineered (or managed) degradation" assists the organization in averting catastrophic system failure when the total needs overwhelm available resources.

- Managing degradation of services: It is common in major emergencies and disasters for medical needs to severely challenge or exceed available resources, creating a relative "scarce resource" situation. An important strategy concept when this mismatch becomes critical is **engineered or managed degradation of services** so that critical functions are maintained (see terminology textbox).

Terminology alert!

Managed or engineered degradation: In a system under extreme stress, the identification and selection of priority activities that should be preserved, while allowing less critical services to degrade. This management strategy is designed to avoid catastrophic or random failure of emergency response systems when system capacity or capability is exceeded. The guiding principle is the preservation of the functions most important to achieving organizational goals (i.e., mission critical systems) and as such is synonymous with the goals of COOP and business continuity in physically disruptive events. It may also be referred to as "engineered system failure" or "managed degradation of system functions."

In healthcare services when healthcare needs exceed available resources (i.e., scarce resource situations), managed degradation is generally addressed through *modified delivery of healthcare services*. This important concept will be explored at greater length later in the text, but several key sub-strategies are noted below.

- Deliberate selection of functional priorities: This concept entails the strategy of deliberatively (i.e., through incident action planning) maintaining mission critical activities at the expense of others in the face of severe response system challenge. This is accomplished by selectively applying scarce resources to the priority activities and even withdrawing resources (usually staffing) or staff attention from one activity to maintain services in another. This deliberative and objective methodology differentiates "managed degradation" from recently promulgated "altered standards of care" or "crisis standards of care."[33] (Further discussion in lesson 1.1.3.) For example, an activity that commonly receives less attention during a surge in patient volume is documentation. Certain portions of patient documentation, however, are critical in maintaining quality care for the patient (medications given, vital signs, etc.). Other portions of patient documentation are primarily performed to meet regulatory and reimbursement requirements. This latter type of documentation may be suspended during the initial stages of incident operations when large numbers of patients arrive simultaneously. After the

[33] IOM (Institute of Medicine). 2009. Guidance for establishing crisis standards of care for use in disaster situations: A letter report. Washington, DC: The National Academies Press.

initial surge, these documentation gaps may potentially be reconstructed. Another example is the suspension of elective surgical procedures during incident response.

- ○ Preventing random and catastrophic failures: Careful attention to managing system degradation as relative resource deficiency increases is critical, so that resource allocation maintains mission critical functions. This approach can prevent random service deficiency or catastrophic failure of the overall response system. An example of this can be an extension of the emergency department scenario presented above: To meet patient surge capability for excess critical care patients beyond what can be rapidly accommodated in the critical care units, selected staff and equipment may be brought from the critical care units, with mobilization of off-duty critical care staff, to provide critical care services in the ED and in appropriate patient care overflow (i.e., alternate care) sites. Qualified staff may transition from their usual role of providing critical care services to supervising the care provided by other surge personnel. While this arrangement may temporarily vary from usual practice, it can maintain essential services and avoid catastrophic overload of intensive care units.

An exclusive focus on identifying additional people, places, and things is not cost effective or efficient and will not address important response issues such as the mobilizing and managing these resources.

The Case for a Formal System to Manage Healthcare Organization Emergency Response and Recovery Activities

Many current initiatives to address "Medical Surge" focus almost exclusively upon identifying and establishing specific standby resource capacities. These include adequate numbers and specialty types of hospital beds, personnel, pharmaceuticals, supplies, and equipment. This type of focused approach creates problems with:

- Controlling costs associated with standby assets: High cost is associated with many of the resources: Medical equipment and supplies, the limited "shelf-life" of medications, the rapid out-dating of equipment, and the costly biomedical servicing necessary to maintain the assets in a readiness state are all very expensive. This cannot be supported through income from clinical operations, and outside funding streams are commonly **inadequate and non-sustained** for most healthcare systems.

- Minimizing "exclusive use" caches of equipment and supplies: Developing equipment and supplies that are exclusively for rare events creates a conflict with normal business practice:

  - ○ Revenue return: With the modern business practices of "just-in-time" inventory and "just-enough" staffing, having an expensive investment that provides no return makes little business sense. This cost item will be adversely perceived every time the healthcare system's operating budget is reviewed for cost containment purposes.

- Narrow use: Maintaining large equipment and supply caches strictly for the rare major event conflicts with the "dual-use"[34] (or multi-use) strategy espoused by most experts. To complicate the issue further, response personnel will rarely be familiar with the storage, mobilization, and use of materiel that is not part of regular duties.

- Determining the quantity of necessary standby assets: Developing this determination is not a simple process, and focusing upon the development of an otherwise unused reserve to address adequate resource numbers may be an expensive and unsustainable approach. Determining whether adequate surge resources are available in the surrounding region, in a time-frame that meets medical necessity, is equally important. It must be recognized, therefore, that **the necessary standby quantity of each critical asset depends upon the response systems and processes** that:
    - Identify medical needs as emergency circumstances evolve.
    - Identify the resources to address the needs in a timely manner.
    - Move the resources expeditiously to locations of need (as applicable).
    - Manage and support the resources to their absolute maximum capacity.

Effective management systems provide a more efficient alternative to the usual approach that focuses narrowly on resources alone.

- Addressing surge and operational impact simultaneously: The need for medical surge may occur in the face of a hazard that actually compromises the delivery of medical services or requires mass patient and staff movement or other protective actions as noted above. Structural damage or contamination, utility loss, illness and injury among healthcare workers, and many other consequences of hazard impacts may have to be managed at the same time as the patient load. Ideally, the same management system should be used to manage all potential emergency response and recovery activities including both medical surge and the organizational resiliency

Effective management systems have additional benefits such as the coordination between and within organizations so that the need for total resources may be less.

[34] Natural Disasters Roundtable. *A Summary Of The Forum On Countering Terrorism: Lessons Learned from Natural and Technological Disasters* (2002); accessed February 15, 2010 at: http://www.nap.edu/books/NI000412/html/1.html

necessary to continue medical care operations for the non-incident patient population.

To address these critical issues, a broader approach to achieving and maintaining medical response is required. It must include an effective management system to minimize any need for a very large inventory of staff, equipment and supplies, and yet be prepared to respond effectively to all aspects of an incident. **Attention to effective management systems allows organizations to not only maintain continuity of operations, protect occupants, and accomplish medical surge capacity and capability throughout an incident, but also to optimize recovery and the return to readiness for any follow-on incident.**

From a resource perspective, the emergency response system's processes must:

- Determine, in a timely fashion, the specific resource types and quantities needed.
- Acquire them pre-incident or rapidly during response.
- Manage the resources effectively during response.
- Demobilize resources and accomplish return-to-readiness actions as efficiently as possible.

Additional benefits of this type of effective management system are:

- Enhanced internal coordination within the individual organization to maintain services and maximize surge within available resources.
- Fewer necessary standby resources, if systems are in place to maximize the abilities of existing operational resources.
- Optimal integration of "outside" resources, whether standby, mutual aid, State or Federal assistance, when necessary to address incident needs.

Effective Emergency Management

To maximize emergency response that achieves adequate healthcare organization response, the system and processes must be developed and maintained within a larger, more comprehensive initiative, which has been defined as "emergency management."

The remaining lessons in this unit present the history, principles, core concepts and influential research and guidance documents that shape the practice of emergency management (EM) for healthcare systems. Comprehensive emergency management extends across mitigation, preparedness, response and recovery while incident management focuses upon directly managing emergency response and recovery. Even during response and recovery, emergency management remains strategic in nature and supports tactical incident management (or incident command) operations.

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Lesson 1.1.2 Emergency Management History, Overview and Principles

Lesson Objectives

- *List important historical milestones in the development of Emergency Management as a professional discipline.*
- *Provide a definition of Emergency Management as a professional discipline.*
- *List important documents (Federal) that contain core concepts relevant to the practice of Emergency Management.*
- *Distinguish the difference between the Incident Command System and the National Incident Management System.*
- *Describe the origins of Continuity of Operations (COOP) and its relationship to Emergency Management.*

Introduction and Brief History

Emergency Management is a relatively new discipline. The formal predecessor to emergency management was the more narrowly defined Civil Defense. This precursor occupation evolved in the U.S. during the 1950s and 60s to address civilian preparedness for the threat of nuclear attack on the U.S. civilian population. As emergencies and natural disasters occurred in various areas of the U.S., Civil Defense personnel and their resources became important elements in the emergency response. As a consequence, local and State governments became more cognizant of their responsibility for emergency response within their jurisdictions. They also began to recognize the major deficiencies in depending upon Civil Defense and other narrowly focused initiatives for protecting citizens and property against natural and technological hazard impacts. Use of civil defense shelters and communications was very rare.[35] Planning was commonly isolated. Response to natural and technological incidents by well-meaning civil defense personnel, who focused day-to-day upon the nuclear threat, was variable and not uncommonly ad hoc. This created impetus for a different approach. Emergency preparedness beyond Civil Defense began to be promoted in many areas of the U.S., but preparedness was not strongly coordinated with mitigation, response, or recovery needs. As an outgrowth of the widely varying experience, States appointed a range of disciplines to lead their statewide efforts.

[35] Quarantelli EL. Studies in Disaster Response and Planning (1979). Ohio State University Research Foundation for Department of the Army, Defense Civil Preparedness Agency; Contract no. DAHC20-72-C-0301 (1972-1978).

The National Emergency Management Association (NEMA) was established in 1974 when state directors of emergency services first united to exchange information on common emergency management issues that threatened their constituencies.[36]

Federal initiatives related to emergencies and disasters were similarly narrow and disjointed, scattered across many Federal departments and agencies. At the urging of NEMA and others, President Jimmy Carter established the Federal Emergency Management Agency by Executive Order in 1979.[37]

As concern continued with the lack of a common strategy for addressing mitigation and other disaster related activities, the National Governors' Association undertook an Emergency Preparedness Project in 1978.[38] This year-long study culminated in a report that was followed by the May 1979 publication "Comprehensive Emergency Management: A Governor's Guide."[39] This landmark book described the concept of Comprehensive Emergency Management for the first time and clearly distinguished it from Civil Defense and also from narrowly focused Emergency Preparedness. Comprehensive Emergency Management concepts clearly demonstrated the relationship between mitigation, preparedness, response and recovery through its four "emergency management phases" and emphasized the all hazards approach to emergency management activities.

Integrated Emergency Management System, published by FEMA in 1983, is another foundational document for EM programs.

In 1983, FEMA publicized the Integrated Emergency Management System (IEMS), a guidance document that demonstrated a 13 step approach to coordinating all of the activities of Comprehensive Emergency Management, and emphasized a balance between the activities of the four phases.

The poor performance of FEMA and Florida emergency management officials following the catastrophic impact of Hurricane Andrew in 1992 led to an increased focus on improving emergency management at all levels of government.[40] Emergency Management grew professionally

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[36] National Emergency Management Association (NEMA) web site, NEMA Past and Present; accessed February 15, 2010 at: http://www.nemaweb.org/default.aspx?ID=1916

[37] FEMA. FEMA History. The Federal Emergency Management Agency web site; accessed February 15, 2010 at: http://www.fema.gov/about/history.shtm

[38] National Governors Association. State Comprehensive Emergency Management: Final Report of the Emergency Preparedness Project (1978). National Governors Association, Center for Policy Research, Washington DC

[39] Comprehensive Emergency Management: A Governor's Guide (May 1979). National Governors' Association Center for Policy Research, Washington, D.C.

[40] Rubin CB. Local Emergency management: Origins and evolution, in Waugh WL, Tierney K. Emergency Management Principles and Practices for Local Government, Second Edition (2007). ICMA, Washington, DC, page 34.

throughout the 1990s, with FEMA and NEMA working closely with others to develop professional guidance, college and graduate level education programs,[41] and contributing to stronger professional standards. FEMA and NEMA supported the development of the Certified Emergency Manager through the International Association of Emergency Managers[42] and fostered the development of the independent Emergency Management Assessment Program[43] for government agencies.

After the terrorism attacks in 2001, FEMA was subsumed into the newly established Department of Homeland Security, and efforts were conducted to merge emergency management as a subordinate topic into the newly described concept of "homeland security." In summary, the failure of this approach culminated in the dysfunctional response to Hurricane Katrina in New Orleans, Louisiana, with failure demonstrated at the local, State and Federal levels of response. This emergency management versus homeland security concept is further addressed later in this lesson.

The past several years have witnessed resurgence in interest in emergency management as a profession and an increasing recognition that it is distinguished from homeland security in its focus, philosophy, strategy and methodology. In 2007, an initiative supported by FEMA's Emergency Management Institute produced a set of principles for emergency managers, which are presented later in this lesson.

Emergency management is increasingly recognized as a professional discipline. This professionalism is not always recognized by healthcare systems as they try to address resiliency and medical surge.

The growth of emergency management within the healthcare industry began more recently than general emergency management. Much of it has been influenced by the evolving accreditation guidance from The Joint Commission, which over the past decade has gradually become more aligned with emergency management. For many years preceding 2001, emergency management activities were primarily performed by the "disaster committee" within hospitals. Initiatives now viewed as integral to healthcare emergency management evolved from multiple very separate and disconnected venues such as:

- Disaster medicine, which focuses primarily upon the clinical guidance

[41] The FEMA Emergency Management Higher Education Program was established in 1994 to promote college-based emergency management education; FEMA Higher Education Program web site accessed February 15, 2010 at: http://training.fema.gov/EMIWeb/edu/

[42] The Certified Emergency Manager Program. International Association of Emergency Managers web site; accessed February 15, 2010 at: http://www.iaem.com/certification/generalinfo/intro.htm

[43] EMAP History. Emergency Management Assessment Program web site; accessed February 15, 2010 at: http://www.emaponline.org/index.php?option=com_content&view=article&id=52&Itemid=56

for mass casualties

- Healthcare engineering, which addresses mission critical areas of infrastructure continuity, including utilities, heating, ventilation and air conditioning (HVAC), and other support systems
- Business continuity, which focuses primarily upon traditional business systems such as information technology, and financial management.
- Healthcare executive efforts which were driven by regulatory and accreditation compliance, with recent recognition of the importance of continuity planning.
- Healthcare security efforts which focus on the protecting facilities and the resources available within them.

The inter-relatedness of these areas has become increasingly obvious, even as they each developed distinct and often conflicting terminology and performance methodology. The discipline that encompasses all of these initiatives in a standardized manner is healthcare emergency management. To better reflect the scope of work that must be addressed, The Joint Commission, formerly the Joint Commission on Accreditation of Healthcare Organizations (JCAHO),[44] and many others have recommended a name change away from "disaster" and other descriptors, using "emergency management"[45,46] as the unifying concepts and terminology. This text presents the principles, core concepts and common management practices that bring these individual healthcare initiatives together and supports them in a balanced, integrated manner.

Emergency Management Definition

This text advocates that represents Emergency Management is a valued discipline and **an evolving management science**. As the practice of emergency management within healthcare systems becomes increasingly recognized as a profession, it is becoming increasingly less acceptable to assign just anyone who "knows something about disasters" to be primarily responsible for development, implementation, or maintenance of an emergency management program in major organizations.

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[44] The Joint Commission surveys hospitals and accredits them for adherence to standards set by the organization. It has evolved standards over many years related to emergency management for healthcare systems, initially under its Environment of Care umbrella.

[45] Information is available on The Joint Commission and its programs; accessed February 15, 2010 at: http://www.jointcommission.org/AccreditationPrograms/

[46] Barbera JA, Macintyre AG. *Medical Surge Capacity and Capability: A management system for integrating medical and health resources during large-scale emergencies* (Second Edition, September 2007). CNA Corporation for the U.S. Department of Health and Human Services; accessed February 15, 2010 at: http://www.hhs.gov/disasters/discussion/planners/mscc/

The question then becomes, "What exactly is Emergency Management?" A traditional FEMA definition, developed and published during the so-called "golden years" of FEMA,[47] is presented in the terminology textbox below.

Terminology alert!

Emergency Management: Organized analysis, planning, decision making, and assignment of available resources to mitigate (lessen the effect of or prevent) prepare for, respond to, and recover from the effects of all hazards. The goal of emergency management is to save lives, prevent injuries, and protect property and the environment if an emergency occurs (*FEMA 1995*).[48]

The authors also present their definition of Emergency Management, which reflects the complexity and **management focus** of modern emergency management (see terminology textbox).

Terminology alert!

Emergency Management (management focus): The science of managing complex systems and multidisciplinary personnel to address emergencies and disasters, across all hazards and through the phases of mitigation, preparedness, response, and recovery.

[47] Waugh WL. Local Emergency Management in the Post 9/11 World. In Waugh WL, Tierney K. Emergency Management Principles and Practices for Local Government, Second Edition (2007). ICMA, Washington, DC, page 14.
[48] FEMA. *Introduction to Emergency Management* (1995). Emergency Management Institute, Emmitsburg, Maryland.

Emergency management, as practiced in the U.S., is based upon established principles and practices that should also be recognized by healthcare systems as they develop their EM programs.

Medical personnel sometimes are overly 'creative' in addressing emergency management issues before consulting established literature that provides valid guidance.

Comprehensive Emergency Management as a Professional Discipline

Emergency management, as a professional discipline, is comprised of key principles, core concepts, guiding standards and common practice. These encompass the body of knowledge, skills and abilities (KSAs) in emergency management, plus the core strategies used in applying these KSAs and so distinguish Emergency Management from homeland security and other related professional areas. Principles underlie both the research and practice of emergency management and provide the terminology, theory, and organization upon which the discipline is based. Key principles have analogies in the field of medicine, such as the modern theory of disease transmission and its application across all related areas of medical research and practice.[49]

The important foundational concepts and principles, and the landmark documents in which they are described, are listed in Textbox 1.1.2.1 and briefly summarized below to present the breadth of the emergency management discipline and its relation to emergency management for healthcare systems.

Other relevant guidance is referenced throughout this educational text.

[49] In the past, many healthcare experts have undertaken the practice and research of emergency management without little or no appreciation or knowledge of these foundational concepts. This is analogous to an emergency manager attempting to practice medicine without appreciation or knowledge of disease transmission, anatomy, physiology, or many other fundamental medical concepts.

Textbox 1.1.2.1

Foundational Guidance Documents for Emergency Management for Healthcare Systems

- Comprehensive Emergency Management (CEM)
- Integrated Emergency Management System (IEMS)
- The Incident Command System (ICS)
- The Federal Response Plan (FRP)
- Standardized Emergency Management System (SEMS)
- National Incident Management System (NIMS
- National Response Plan (NRP) (succeeding the Federal Response Plan)
- National Response Framework (NRF) (succeeding the National Response Plan)
- Federal Continuity Directives 1 and 2 (Continuity of Operations)
- National Infrastructure Protection Plan (NIPP)
- Management of Domestic Incidents - Homeland Security Presidential Directive (HSPD)-5.
- National Continuity Policy National Security Presidential Directive (NSPD)-51/(HSPD)-20
- National Strategy for Public Health and Medical Preparedness - Homeland Security Presidential Directive (HSPD)-21
- Pandemic and All-Hazards Preparedness Act (PAHPA), Public Law No. 109-417

Relevant standards are presented later in this lesson and key research is described in Lesson 1.1.3

One of the first authoritative documents describing EM was Comprehensive Emergency Management published by the National Governor's Association in 1978.

Comprehensive emergency management

- Comprehensive Emergency Management - 1978: As noted in the brief history of Emergency Management, the concept of Comprehensive Emergency Management (CEM) was first articulated in the 1978 committee report of the National Governors' Association, which studied the intergovernmental system of emergency management in the United States.[50] The concepts presented in this work clearly demarcate **emergency management** from its narrower predecessors, **civil defense** and **emergency preparedness**.

[50] Drabek, T.E., and Hoetmer, G.J. Editors. *Emergency Management: Principles and Practices for Local Government* (1991). Chapter 1. The Evolution of Emergency Management. Washington, D.C.

CEM defined the four phases of EM and introduced the concept of "all hazards."

The follow-on landmark 1978 publication *Comprehensive Emergency Management: A Governor's Guide*[51] declared:

- CEM and four phases: CEM groups emergency management activities into four distinctly defined phases. The activities within each phase are generally associated through time and functional relationships. More importantly, the management function that most effectively plans, directs, coordinates and assures completion of the activities is relatively distinct within each phase and is best used for grouping activities according to CEM phase. The CEM phases are summarized as:

  - ***Mitigation***: The phase of Comprehensive Emergency Management that encompasses all activities that reduce or eliminate the probability of a hazard occurrence, or eliminate or reduce the impact from the hazard if it should occur. In comprehensive emergency management, mitigation activities are undertaken during the time period prior to an imminent or actual hazard impact.

  - ***Preparedness***: The phase of Comprehensive Emergency Management that encompasses actions designed to build organizational resiliency and/or organizational capacity and capabilities for response to and recovery from disasters and emergencies.[52] These activities precede any imminent threat or hazard impact (activities in the imminent or post-impact timeframe are considered part of response).

  - ***Response***: The phase of Comprehensive Emergency Management that encompasses activities immediately before (for an impending threat), during, and after a hazard impact to address the immediate and short-term effects of the disaster or emergency.

  - ***Recovery***: The phase of Comprehensive Emergency Management that encompasses activities and programs implemented during and after response that are designed to return the entity to its usual state or to a "new normal." For response organizations, this includes return-to-readiness activities.

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[51] NGA. *Comprehensive Emergency Management: A Governor's Guide* (1979). U.S. Government Printing Office, Washington, DC: pp.11-17.
[52] Adapted from the *VHA Emergency Management Program Guidebook* (2009). Washington DC; accessed February 15, 2010 at: http://www1.va.gov/EMSHG/page.cfm?pg=185

- CEM applies to “all risks,”[53] with the document’s definition of “all risks” equating to the current EM term “all-hazard” (see Textbox 1.1.2.2). Associated with this statement are strategies for the identification, analysis, and management of common vulnerabilities across multiple hazards. The organization establishes common response processes (notification, incident management, information processing, and many others) that can be used across the full range of hazard events.

Textbox 1.1.2.2

What Does “All-Hazards” Mean?

The term “all-hazards” denotes a specific **strategy** for managing activities in an emergency management program. Throughout the four phases of EM, management structure, processes, and procedures are developed so they are applicable to every significant identified hazard. The few remaining interventions that are specific to individual hazards are layered on top of the basic components as indicated. For example, the procedures for notifying appropriate personnel during EOP activation would use the same process across all hazard types, even though the types of personnel notified and mobilized may vary by hazard.

- CEM concepts are applicable across all levels of government and the private sector and support the goal of organizational resilience. CEM has become the cornerstone of professional emergency management in the United States and even formed the basis for the organizational structure of the Federal Emergency Management Agency (FEMA), which was founded in 1979. The authors of this text have established their interpretation of the original NGA description of CEM and its foundational principles, upon which further doctrine and “core concepts” have been developed. The foundational principles are presented in Textbox 1.1.2.3. Core concepts based upon each of these foundational principles are presented throughout this text, with common, validated practices presented that implement these principles and accomplish the goals and objectives of CEM.

[53] “All risks” is qualified as “attack, man-made, and natural, in a federal-state-local partnership” (NGA. *Comprehensive Emergency Management: A Governor’s Guide* (1979). U.S. Government Printing Office, Washington, DC: 11). The “risk” categories correspond to the now common “hazard categories” of “intentional, technological, and natural.”

Text box 1.1.2.3

Author-derived Principles of Comprehensive Emergency Management

- CEM uses management science to plan, direct and coordinate the full range of emergency management activities.[54]
- CEM groups emergency management activities into four emergency management phases (mitigation, preparedness, response and recovery) for the purpose of proactive, effective management[55, 56]
- CEM addresses all hazards using common organizational structure, process and procedures to the fullest extent possible.[1]
- CEM manages the coordination of the full set of actors (disciplines, stakeholders, and levels of government) and their activities related to emergencies and disasters.[57]
- CEM manages the integration of all EM activities within a single, well organized and ongoing EM program.[58]
- CEM manages a process for risk-informed decision-making to determine priority action and assignment of resources.[59]

Homeland security (as currently defined) has a more narrow scope than emergency management. This concept is not always recognized.

- In the post- 9/11 era, the essential features of CEM have been retained and incorporated within the Department of Homeland Security, the National Response Plan, the National Response Framework, and the National Incident Management System. Participation in the emergency management process has now

[54] Derived from the overall CEM description, which emphasizes the importance of attention to managing.

[55] "The "comprehensive" aspect of CEM includes all four phases of disaster or emergency activity: mitigation, preparedness, response, and recovery. It applies to all risks: attack, man-made, and natural, in a federal-state-local partnership." Comprehensive Emergency Management: A Governor's Guide (May 1979), page 11.

[56] "Prevention" in homeland security is a law enforcement/intelligence/counter-terrorism function and distinct from the prevention element within mitigation ….

[57] "A CEM program identifies agencies and individuals who have useful resources to bring to bear on all aspects of emergencies. It motivates them to apply their resources in the most productive manner, and it coordinates their disaster activities. The coordination function should not be confused with the concept of "directing," as in directing emergency response operations." Comprehensive Emergency Management: A Governor's Guide (May 1979), page 11.

[58] "…a program of comprehensive emergency management, that is, the integration of all possible organizations at all levels into all phases of emergency activity, for all types of disasters." Comprehensive Emergency Management: A Governor's Guide (May 1979), page 14

[59] Derived from the overall CEM description.

been explicitly extended to citizens' groups as well.[60] It is important to recognize, however, that Homeland Security, which to date has only been defined by the U.S. government as focused upon terrorism (see terminology textbox) is not the same as EM (see Textbox 1.1.2.3).

Terminology alert!

Homeland Security: "…a concerted national effort to prevent terrorist attacks within the United States, reduce America's vulnerability to terrorism, and minimize the damage and recover from attacks that do occur."[61]

Textbox 1.1.2.3

Is Homeland Security the Same as Emergency Management?

Because of the terrorist attacks in the United States in 2001, a Department of Homeland Security (DHS) was created, integrating 22 various Federal agencies, including the Federal Emergency Management Agency (FEMA). A guiding philosophy for FEMA since its creation in 1980 was Comprehensive Emergency Management (CEM), as created by the National Governor's Association in 1978. CEM is a conceptual framework for emergency management and consists of four phases that are cyclical: mitigation, preparedness, response and recovery.

CEM remains unchanged. Homeland security is an agency-related or industry application of emergency management with a counter-terrorism focus, such that prevention and protection are important activities conducted with an offensive stance and managed very differently from emergency management "prevention and protection" activities managed during the mitigation, preparedness, response, and recovery phases of CEM. In summary, emergency management and homeland security, while related, are separate and distinct entities and must be recognized as such.

[60] The Citizens Corps (http://www.citizencorps.gov/), Citizens Emergency Response Team (CERT) (http://training.fema.gov/EMIWeb/CERT/) and many other volunteer programs have been established to involve citizens in organized emergency response; accessed February 15, 2010.

[61] Office of Homeland Security. *National Strategy for Homeland Security* (2007), p. 3; accessed February 15, 2010 at: http://www.dhs.gov/xlibrary/assets/nat_strat_homelandsecurity_2007.pdf

One of the important concepts introduced by IEMS was the elevation of the importance of the Hazard Vulnerability Analysis (HVA).

Integrated Emergency Management Systems

- Integrated Emergency Management System (IEMS) - 1983: The Integrated Emergency Management System (see Textbox 1.1.2.4) was promulgated by FEMA, early in the agency's existence, to explain how State and local jurisdictions could implement an "all-hazards" CEM program. Its goal was to "develop and maintain a credible emergency management capability nationwide by integrating activities along functional lines at all levels of the government and, to the fullest extent possible, across all hazards."[62] This guidance was primarily directed towards State and local government, but the recommended actions are applicable to any organization interested in establishing a consistent strategy for achieving an emergency management capability.
  - IEMS promotes a 13-step process that provided a foundational framework for many emergency management programs in the United States (see Textbox 1.1.2.4).
  - Notably, it raised the Hazard Vulnerability Analysis and Mitigation to the same levels of importance that response and recovery had received.[63]
  - While the IEMS approach has been modified over the years by most organizations practicing emergency management, it provided a strong precedence for structuring the entire EM program in an organized, inter-related process.

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[62] FEMA. *The Integrated Emergency Management System: Process Overview* (1983), pp. CPG 1-100. Federal Emergency Management Agency, Washington D.C.

[63] Drabek TE, Hoetmer GJ (ed). *Emergency Management: Principles and Practice for Local Government.* International City Management Association (1991); Washington D.C.: pp.133-134.

Textbox 1.1.2.4

Integrated Emergency Management System (1983)

Step 1: Hazard analysis
Step 2: Capability assessment
Step 3: Emergency operations plans
Step 4: Capability maintenance
Step 5: Mitigation efforts
Step 6: Emergency operations
Step 7: Evaluation
Step 8: Capability shortfall
Step 9: Multiyear development
Step 10: Annual development increment
Step 11: State/local resources
Step 12: Federal resources
Step 13: Annual work increment.

Incident Command System and National Interagency Incident Management System (NIIMS)

Incident Command System – 1970s: Perhaps one of the most critical foundational constructs for Emergency Management is the **Incident Command System**. Simply put, ICS provides a standardized management structure with accompanying processes that can be used by any organization(s) to respond to incidents that challenge their day-to-day management structure. Traditional day-to-day management systems are usually very effective at what they have been designed to achieve (e.g., make products, provide services, accumulate income, and so on). They are generally not sufficient for response to emergencies or disasters that entail a very different context (e.g., different time pressures, different requirements for information management, and greater levels of uncertainty) and different objectives (e.g., save lives, prevent loss of property, provide organizational resiliency, coordination/integration with other agencies, etc). An in-depth examination of ICS applied to healthcare systems is presented in Units 2 and 3 of this educational text.

- History: ICS was developed under a congressional charter to solve interagency coordination problems associated with wild land firefighting. For many years, national consistency was promoted though the maintenance of the National Interagency Incident Management System (NIIMS).[64] ICS was adopted by FEMA for

The Incident Command System (ICS), introduced in the 1970s, provides a management framework for organizations during emergency response. Its usefulness has been demonstrated for multiple disciplines beyond the fire community and it now serves as the basis of response for all levels of government. It also applies to certain components of the private sector.

[64] NIIMS: *National Interagency Incident Management System;* accessed February 15, 2010 at: http://www.nwcg.gov/pms/docs/310-1_1993.pdf

A core concept in ICS is that all of the activities necessary for organizational response to an incident can be categorized into similar groups or functions. This is consistent with the disaster research cited below.

managing its incident operations in the 1990s. In 2003, the newly created Department of Homeland Security (DHS) announced the creation of the National Incident Management System (NIMS) which is constructed upon ICS principles (it should be noted that NIMS also contains material related to preparedness and mitigation as well and is not exclusively response oriented). NIMS now provides the version of ICS that is intended for use by response organizations in the US and was mandated for Federal, State and local agencies beginning in FY 2005.[65] The Hospital Emergency Incident Command System (HEICS),[66] popular with many healthcare facilities, has been renamed the Hospital Incident Command System (HICS) and adapted to be more consistent with NIMS ICS. Scalability is also addressed to meet the needs of various sized healthcare organizations across a range of settings.[67]

- Basis for ICS: The Incident Command System originated to address the recurrent management problems experienced in complex, multi-agency responses to wild land fires in the United States in the 1970s.[68] Contrary to common knowledge, the Incident Command System (ICS) was based upon an extensive research effort and an extensive development process through FIRESCOPE.[69,70] Concepts used to develop the Incident Command System were drawn from business management, military command, and systems engineering sectors.[71] Many longstanding management concepts were incorporated into ICS (Span of Control, Management by Objective, and others); the management research behind these concepts, which are applicable across the phases of Comprehensive Emergency Management, are discussed in Lesson 1.1.3. The fully described ICS management system, designed for managing large wild land fires, has since been adapted and demonstrated effective by multiple disciplines that respond to a wide range of complex incidents.

- Managing complex incidents: A primary tenet of ICS is the recognition of the many different activities that must occur to successfully manage

[65] NIMS Integration Center Web Site; accessed February 15, 2010 at: http://www.fema.gov/txt/nims/nims_ics_position_paper.txt
[66] HEICS: *Hospital Incident Command System*; accessed February 15, 2010 at: http://www.heics.com/HEICS98a.pdf
[67] State of California Hospital Incident Command System Update Project; accessed June 4, 2006.No longer available through the Internet.
[68] NIMS and the Incident Command System: *The History of the Incident Command* System. NIMS Integration Center Web Site; accessed February 15, 2010 at http://www.fema.gov/txt/nims/nims_ics_position_paper.txt
[69] FIRESCOPE. Home page; accessed February 15, 2010 at http://www.firescope.org/
[70] Interview with Mr. Chuck Mills, US Forest Service (retired), a member of the research and development team for the original FIRESCOPE ICS development; interview conducted June 29, 2009.
[71] Ibid

response to any threatened or actual hazard impact. These tasks can be grouped into categories that reflect functional similarities. For example, all tasks that represent support of the organization's response through the acquisition and provision of accurate information can be grouped together into one functional group (Planning Section). This functional approach led to the description of five main functional areas (see Exhibit 1.1.2.5) that are necessary for managing incident response (more in-depth discussions are provided in Units 2 and 3):

- Command: provides overall direction of the response through the establishment of objectives for the organization. This function may be performed through "unified command," which is explained later in this lesson. In addition to the incident commander, this functional area may include other critical, "high-level" activities such as:
  - Safety: Identifies and assesses hazards to the organization's personnel and develops measures to prevent injury or illness from the hazards.
  - Liaison: Provides coordination and integration with agencies or organizations external to the response system in question.
  - Public Information: Develops and provides, subject to the incident commander's approval, incident information for the public and for response personnel.
  - Senior Advisors: Additional positions, as designated by the incident commander, to provide needed advice and expertise to the command staff.

Within ICS, Command sets the goals and objectives of the response for the organization and the Operations Section performs activities to achieve them. The remaining functions support Command and Operations.

- Operations: Through developed strategies and tactics, the Operations Section achieves the objectives set by Command. The Operations Section is often the most "visible" function in the response system as it addresses the hazard impact (e.g., patient care as a result of the hazard impact, provision of security after a threat, re-establishment of power after an outage). Unfortunately, healthcare system emergency program managers have commonly focused attention exclusively on preparing for Operations to the detriment of the other functions.

- Planning: Supports the response organization by conducting the incident planning activities and through acquiring, processing, documenting, and disseminating all incident-related information. Incidents that involve healthcare systems can have intense information management requirements, highlighting the importance

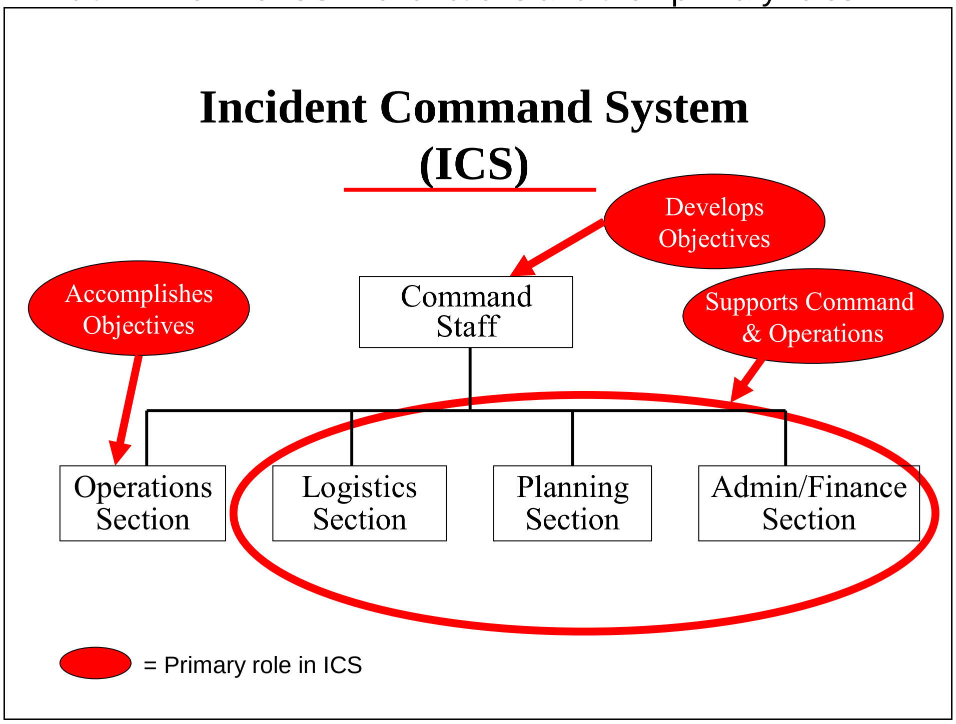
The use of ICS provides many advantages beyond an organizational structure (functions). It also provides template processes and procedures that enhance the organization's effectiveness and efficiency.

of this critical function.

- Logistics: Supports the response organization with facilities, transportation, supplies, equipment maintenance and fuel, food services, communications and information technology support, and emergency responder medical services.

- Finance/Administration: Supports the response organization by tracking incident costs and addressing issues such as reimbursements, claims, and regulatory compliance.

Exhibit 1.1.2.5 The ICS five functions and their primary roles.



- Advantage of ICS: The use of ICS provides advantages beyond merely organizing assets into like-minded tasks. This merely represents a "system description," demonstrating the direct relationship between various functions. The critical advantage that ICS provides is a detailed "concept of operations" or how each section functions (performs its assignments) and how they interact through the successive stages of a response.

  - All-hazard application: This concept of operations is applicable to any type of hazard incident, so trained responders understand the process and how they will participate in a coordinated fashion.

  - Critical management processes: Processes critical to incident management and incorporated into the ICS concept of operations include:

- Accountability: Process for accountability and tracking of all resources assigned to the incident.

- Management by objective: This is a well-described strategy within ICS (see terminology textbox), delineating how Command actually oversees and directs the organization's response.

Terminology alert!

Management by Objective: "A management approach that involves a five-step process for achieving the incident goal. The Management by Objectives approach includes the following: establishing overarching incident objectives; developing strategies based on overarching incident objectives; developing and issuing assignments, plans, procedures, and protocols; establishing specific, measurable tactics or tasks for various incident-management functional activities and directing efforts to attain them, in support of defined strategies; and documenting results to measure performance and facilitate corrective action.." [72]

The proactive management strategy in ICS that directs and coordinates resources across the incident command system by:

1. Setting overall 'incident' objectives for the incident and objectives for each specific operational period.
2. Assigning resources to achieve those objectives and to provide support.
3. Providing plans, procedures, and protocols to establish parameters within which assigned resources operate.
4. Monitor progress towards achieving the incident objectives, reassess and revise the objectives, and revise assignments as indicated.

In ICS, effective decision making is enhanced through a process termed "Management by Objective." Adapted from the business community, this process allows an organization to maintain a pro-active approach during response and is facilitated through the process of Incident Action Planning.

- Incident action planning: This is the process used by Command and the Planning Section to manage information, define the response structure, and provide management by objectives. Initially, during the early stages of an incident, Command of an

[72] National Incident Management System. Glossary of Terms; accessed February 15, 2010 at: http://www.fema.gov/emergency/nims/Glossary.shtm#M

organization is expected to be reactive (e.g., obtaining initial incident information, following the EOP guidance for the early stages, providing tactical guidance in response to immediate circumstances, addressing immediate life safety issues, etc.). ICS promotes a rapid transition to pro-active management as the incident response requirements become better understood. Though not often thought of as important activities in healthcare, establishing a defined response structure and objectives are critical activities for this transition. From the response objectives, strategies and tactics can be developed for the organization and assignments coordinated. Furthermore, response objectives are continually re-evaluated and revised during incident action planning throughout the incident. The result of incident action planning is an action plan (see terminology textbox).

Terminology alert!

Action Plans: Written or verbal plans that reflect the overall incident objectives, objectives for the designated operational period, strategies, specific tactical actions and assignments, and supporting information for the designated operational period. They provide designated personnel with knowledge of the objectives to be achieved and the strategy and steps to be used for achievement, hence improving coordination across different levels of government and intra-State jurisdictional borders. Incident Actions Plans not only provide direction, but also provide a metric for measuring achievement of objectives and overall system performance.[73]

- The limitation of "stand-alone" ICS: ICS is a very valuable management system, but its usefulness is limited as a stand-alone tool. To achieve its purpose, ICS must be fully incorporated into the organization's emergency operations plan (EOP). It should be the guiding framework for the functional structure of the organization's response system, and its principles, processes, forms, and procedures must be established in positions descriptions and competencies, management processes, and task lists and other guidance, including job action sheets.

[73] Adapted from *Standardized Emergency Management System (SEMS) Guidelines*; Part I. System Description Section A (Draft 12/23/94), California Office of Emergency Services, Sacramento, CA, page 5.

Standardized Emergency Management Systems

- Standardized Emergency Management System (SEMS) - 1994: SEMS was legislated as a mandatory California program, and was prompted by severe management coordination problems encountered during major incidents in the preceding years.[74, 75]

    - SEMS, which was formally implemented through regulation, was designed to:

        - Improve the use of mutual aid resources.

        - Reduce the incidence of poor coordination and communications.

        - Reduce resource ordering duplication.

    - Based upon ICS principles: SEMS incorporates the tenets of the Incident Command System (ICS) and demonstrates application of those concepts in a layered approach that **integrates the field response and the multiple levels of government at and below the State level**. Of particular note:

        - SEMS delineates the activities of the five ICS functions: Command, operations, planning, logistics, and finance/administration, but SEMS guidance notes that **above the field response level**, the term **"management"** rather than "command" is more appropriate.

        - SEMS also delineates "management by objectives" and "action planning" as the management methods that provide the important interface between ***different government levels***.

        - SEMS defines two types of action plans:

            - Incident action plans at the field level

            - EOC Action Plans at the local, operational, regional, and

Standardized Emergency Management Systems, developed in California in the 1990's, extends many of the principles of ICS to the intergovernmental relationships necessary during response. In this context, management becomes a more critical term than command (which is more appropriate for the tactical scene).

[74] *Standardized Emergency Management System (SEMS) Guidelines*; Part I. System Description; accessed February 15, 2010 at: http://www.oes.ca.gov/Operational/OESHome.nsf/PDF/SEMS%202006%20Guidelines/$file/2006-SEMSGdlins-Part1A.pdf

[75] CA OES, *Standardized Emergency Management System (SEMS) Guidelines;* accessed February 15, 2010 at: http://www.oes.ca.gov/Operational/OESHome.nsf/Content/B49435352108954488256C2A0071E038?OpenDocument

Continuity of Operations (COOP) is a program applying to Federal agencies mandating capabilities to continue operations of specific mission critical functions after hazard impact. This program has its origins in the civil defense era. Its concepts are relevant to ALL organizations seeking to enhance their resiliency.

COOP concepts are invaluable in developing a comprehensive EM program that ensures the organization can continue to function after hazard impact.

State levels.

- A possible model for a national system: SEMS remains an excellent guide for the use of ICS concepts in organizing and managing EOCs at the multiple levels above field response.[76] These concepts were incorporated into the Medical Surge Capacity and Capability: a Management System for Integrating Medical and Health Resources during Large-Scale Emergencies, which provided a similar strategy for organizing medical response to mass casualties and mass effect incidents.[77] These concepts from MSCC are presented in Unit 2.

- Continuity of Operations (COOP) - 1994: Continuity of Operations (COOP) refers to the "effort within individual organizations (i.e., Federal executive branch departments and agencies) to ensure that Mission Essential Functions (MEFs) and Primary Mission Essential Functions (PMEFs) continue to be performed during a wide range of emergencies, including localized acts of nature, accidents, and technological or attack-related emergencies."[78] COOP, is a defined, mandatory program within the U. S. Government, with its roots in the Continuity of Government (COG) Program of the Cold War.

  - Modern guidance: Government-wide emphasis of COOP gained prominence in the mid-1990s with the issuance of Federal Response Planning Guidance 01-94, "Continuity of Operations (COOP)", dated December 4, 1994.

  - COOP standards: Standards for COOP were subsequently updated by Federal Preparedness Circular 65 (FPC 65), "Federal Executive Branch Continuity of Operations (COOP)", dated July 26, 1999, with the revised version dated June 15, 2004. This guidance has been superseded by the Federal Continuity Directives 1 and 2 (FCD 1 and FCD 2) dated February 2008. FCD

[76] *Standardized Emergency Management System (SEMS) Guidelines*; Part I. System Description, Section A (Draft 12/23/94); accessed February 15, 2010 at: http://www.oes.ca.gov/Operational/OESHome.nsf/Content/B4943535210895448825 6C2A0071E038?OpenDocument
[77] Barbera J.A., Macintyre A.G. (Knebel A, Trabert E, eds). *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources during Large-Scale Emergencies.* CNA Corporation under contract to the U.S. Department of Health and Human Services, (Second Edition, September 2007); accessed February 15, 2010 at: http://www.hhs.gov/disasters/discussion/planners/mscc/index.html
[78] U. S. Department of Homeland Security. *Federal Continuity Directive 1 (FCD 1).* (February 2008). Washington, D.C., p.2; accessed February 15, 2010 at: http://www.fema.gov/pdf/about/offices/fcd1.pdf

1 establishes the following objectives for a viable COOP Plan[79]:

- Ensuring that an agency can perform its MEFs and PMEFs (see the terminology text box) if applicable, under all conditions.
- Reducing the loss of life and minimizing property damage and loss.
- Executing a successful order of succession with accompanying delegation of authorities if a disruption renders that agency's leadership unavailable, or incapable of assuming and performing their authorities and responsibilities of office.
- Reducing or mitigating disruptions to operations.
- Ensuring that the agency has facilities where it can continue to perform its MEFs and PMEFs, as appropriate, during a continuity incident.
- Protecting personnel, essential facilities, equipment, records and other assets, in the event of a disruption.
- Achieving the agency's timely and orderly recovery and reconstitution from an emergency.
- Ensuring and validating continuity readiness through a dynamic and integrated continuity test, training, and exercise (TT&E) program and operational capability.

[79] U. S. Department of Homeland Security. *Federal Continuity Directive 1 (FCD 1).* (February 2008). Washington, D.C., p. A-1; accessed February 15, 2010 at: http://www.fema.gov/pdf/about/offices/fcd1.pdf

Terminology alert!

Mission Essential Functions (MEFs): The limited set of agency-level government functions that must be continued after a disruption of normal activities.

***Primary Mission Essential Functions (PMEFs)*:** A subset of agency MEFs that directly support the National Essential Functions.

National Essential Functions (NEFs): The eight functions the President and national leadership will focus on to lead and sustain during and in the aftermath of a catastrophic emergency.

Textbox 1.1.2.6

FCD 1 and 2 Elements of COOP[80]

1. Essential functions
2. Orders of succession
3. Delegation of authority
4. Continuity facilities
5. Continuity communications
6. Vital records management
7. Human capital
8. Test, training, and exercise (TT&E)
9. Devolution of control and direction
10. Reconstitution

- COOP application to non-government organizations: COOP is most commonly identified with government organizations, and is primarily intended to assure continuity of government services. Non-government organizations (private and not-for-profit sector organizations) also have the strategic goal to survive and maintain their own continuity of operations, both for business and product/service related activities. The initiatives that have been developed and refined to address this area of emergency management for business organizations have been variably titled

[80] U. S. Department of Homeland Security. *Federal Continuity Directive 1 (FCD 1).* (February 2008). Washington, D.C., p. 2 - 6; accessed February 15, 2010 at: http://www.fema.gov/pdf/about/offices/fcd1.pdf

Business Continuity, Business Recovery Planning, Crisis Management, Disaster Recovery, and other designations. As each initiative's scope expanded and details evolved, it was recognized that each approach was essentially addressing the same issues for business and other non-governmental organizations as emergency management. This led to the defining documents such as the NFPA Standard 1600 discussed below, that recognize emergency management and business continuity must operate in a consistent and integrated manner. The elements that support a viable continuity of operations planning capability can be integrated within a Comprehensive Emergency Management Program. Planners can also create a separate stand-alone "COOP plan" if that meets the needs of the organization. In the latter approach, it is optimal to provide guidance that incorporates the elements of COOP seamlessly into the organization's response plans. Alternatively, emergency managers can provide a cross-walk instrument that demonstrates where each element of the COOP Plan is located within the broader emergency response plan documents.

- Distinguishing COOP and business continuity: COOP, as a term that relates to FCD 1 and 2, is most commonly identified with government organizations concerned with potential service interruptions due to any hazard emergency. In this text, the application of these concepts by non-governmental organizations is differentiated from COOP through use of the term **continuity planning** (see terminology textbox).

Terminology alert!

Continuity planning: An internal effort within an organization to assure that the competence, capacity and capability exist to continue and/or restore essential business and service functions and processes across a wide range of potential emergencies, including natural, technological, and intentional hazards. Accordingly, an effective Emergency Management program for healthcare systems, while addressing the four phases of mitigation, preparedness, response, and recovery, includes continuity planning activities to ensure that mission critical business operations, patient care services, and ancillary and support functions continue with little or no interruption or are resumed and recovered according to pre-determined prioritization and planning guidance.

The Incident Command System is designated in NIMS as the operating system for emergency response.

- National Incident Management System – 2004 (Revised December 2008)**:** In March of 2004, the U.S. Department of Homeland Security published the **National Incident Management System (NIMS),** fulfilling the requirement issued in **Homeland Security Presidential Directive (HSPD)-5:** Management of Domestic Incidents. Its intent as restated in the 2008 revision is to provide a "*complexity consistent nationwide template to enable Federal, State, tribal, and local governments, nongovernmental organizations (NGOs), and the private sector to work together to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity.*[81]

  - NIMS topic areas: As stated above, NIMS provides the ICS version that is intended for use in the domestic US response efforts. Though titled National Incident Management System, the document also contains many concepts and principles related to the non-response phases of Comprehensive Emergency Management (which could present an argument for renaming the document the "National Emergency Management System"). The five core chapters/components discuss[82]:

    - Preparedness: Effective emergency management and incident response activities begin with a host of preparedness activities conducted on an ongoing basis, in advance of any potential incident. Preparedness involves an integrated combination of assessment; planning; procedures and protocols; training and exercises; personnel qualifications, licensure, and certification; equipment certification; and evaluation and revision.

The National Incident Management System (NIMS) provides a management template for all disciplines to prepare for and respond to emergencies or disasters in the United States.

    - Communications and Information Management: Emergency management and incident response activities rely on communications and information systems that provide a common operating picture to all command and coordination sites. The NIMS describes the requirements necessary for a standardized framework for communications and emphasizes the need for a common operating picture. This component is based on the concepts of interoperability, reliability, scalability, and portability, as well as the resiliency and redundancy of communications and information systems.

    - Resource Management: Resources (i.e., personnel, equipment, supplies, and facilities) are needed to support critical incident

[81] United States Department of Homeland Security. *National Incident Management System*. (2008); accessed February 15, 2010 at: http://www.fema.gov/emergency/nims/
[82] Ibid.

objectives. The flow of resources must be fluid and adaptable to the requirements of the incident. NIMS defines standardized mechanisms and establishes the resource management process to identify requirements, order, acquire, mobilize, track, report, recover, demobilize, reimburse, and inventory resources.

- Command and Management: The Command and Management component of NIMS is designed to enable effective and efficient incident management and coordination by providing a flexible, standardized incident management structure that effectively coordinates across levels of government, jurisdictional borders, and the public-private interface. The structure is based on three key organizational constructs: the Incident Command System, Multiagency Coordination Systems (first described in detail in SEMS and detailed in this text in Unit 2), and Public Information.

- Ongoing Management and Maintenance: The ongoing management and maintenance of NIMS are supported through the efforts of the National Integration Center (NIC) which:

  - Provides strategic direction, oversight, and coordination of NIMS.

  - Supports both routine maintenance and the continuous refinement of NIMS and its components.

  - Supports ongoing development of incident management-related technology, including strategic research and development.

NIMS compliance by healthcare organizations: NIMS has explicit application to the private sector, including healthcare organizations, which are defined as "response organizations" in Homeland Security Presidential Directive 8, *National Preparedness*.[83] Response organizations and first responders (see terminology textbox), including healthcare organizations, are expected to adopt NIMS. Lack of compliance may impact eligibility for future Federal preparedness funding. In August 2007 the Incident Management Systems Integration (IMSI) Division of the Department of Homeland Security (DHS), in collaboration with the U.S. Department of Health and

NIMS/ICS (as stated within the document itself) can be flexibly applied to meet the needs of different response disciplines.

[83] *Homeland Security Presidential Directive-8 (HSPD-8)*; accessed February 15, 2010 at: http://www.fas.org/irp/offdocs/nspd/hspd-8.html

Human Services (HHS), developed the Fiscal Year 2008 and 2009 NIMS Implementation Objectives for Healthcare Organizations.

Building on previous NIMS Implementation Activities for Hospital and Healthcare Systems, IMSI promulgated the following 14 objectives supporting the goal of establishing cohesive working relationships between hospitals and their respective local government, public health, and other emergency management and response agencies.

The NIMS Implementation Objectives for Healthcare Organizations are grouped under five general categories (see Textbox 1.1.2.7)[84]:

NIMS is evolving but basic metrics have been established for healthcare system compliance.

Textbox 1.1.2.7

NIMS Implementation Objectives for Healthcare Organizations

I. Adoption

1. Adopt NIMS throughout the healthcare organization including all appropriate departments and business units.
2. Ensure Federal Preparedness awards support NIMS implementation (in accordance with the eligibility and allowable uses of the awards).

II. Preparedness: Planning

3. Revise and update emergency operations plans (EOPs), standard operating procedures (SOPs), and standard operating guidelines (SOGs) to incorporate NIMS and the National Response Framework (NRF) components, principles and policies, to include planning, training, response, exercises, equipment, evaluation, and corrective actions.
4. Participate in interagency mutual aid and/or assistance agreements, to include agreements with public and private sector and non-governmental organizations.

III. Preparedness: Training and Exercises

5. Identify the appropriate personnel to complete ICS-100, ICS-200, and IS-700, or equivalent courses.
6. Identify the appropriate personnel to complete IS-800 or an equivalent course.

[84] FEMA Library. NIMS Implementation Objectives for Hospital and Healthcare Organizations; accessed February 15, 2010 at: http://www.fema.gov/library/viewRecord.do?id=3285,.

7. Promote NIMS concepts and principles into all organization-related training and exercises. Demonstrate the use of NIMS principles and ICS Management structure in training and exercises.

IV. Communication and Information Management

8. Promote and ensure that equipment, communication, and data interoperability are incorporated into the healthcare organization's acquisition programs.
9. Apply common terminology as promoted in NIMS, including the establishment of plain language communications standards.
10. Utilize systems, tools, and processes that facilitate the collection and distribution of consistent and accurate information during an incident or event.

V. Command and Management

11. Manage all emergency incidents, exercises, and preplanned (recurring/special) events in accordance with ICS organizational structures, doctrine, and procedures, as defined in NIMS.
12. ICS implementation must include the consistent application of Incident Action Planning (IAP) and common communications plans, as appropriate.
13. Adopt the principle of Public Information, facilitated by the use of the Joint Information Management System (JIS) and Joint Information Center (JIC) during an incident or event.
14. Ensure that Public Information procedures and processes gather, verify, coordinate, and disseminate information during an incident or event.

Terminology alert!

First responder: The term "first responder" refers to those individuals who in the early stages of an incident are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers as defined in Section 2 of the Homeland Security Act of 2002 (6 U.S.C. 101), as well as emergency management, public health, clinical care, public works, and other skilled support personnel (such as equipment operators) who provide immediate support services during prevention, response, and recovery operations. [85]

- NIMS as evolving doctrine: As the NIMS document states, NIMS is not a finalized and complete guide. It is expected that future additions and revisions will be necessary.

- National Response Framework (NRF) - 2008): In January 2008, the U.S. Department of Homeland Security published the **National Response Framework** which superseded the National Response Plan (NRP) (2004), required by Homeland Security Presidential Directive (HSPD)-5. The NRF builds upon the NRP and the Federal Response Plan (1992) which focused primarily on Federal government roles and responsibilities to establish a comprehensive national approach to domestic incident response. The Framework incorporates additional concepts such as public and private-sector participation at all levels, from federal agencies to the state and community level, and also emphasizes the importance of personal preparedness by individuals and their families. As stated in the introduction to the NRF, the Framework "is a guide to how the Nation conducts all-hazards response. It is built upon scalable, flexible, and adaptable coordinating structures to align key roles and responsibilities across the Nation. It describes specific authorities and best practices for managing incidents that range from the serious but purely local, to large-scale terrorist attacks or catastrophic natural disasters.[86]

    - NRF evolution from the NRP: The NRF is based on the

[85] *Homeland Security Presidential Directive-8 (HSPD-8)*; accessed February 15, 2010 at: http://www.fas.org/irp/offdocs/nspd/hspd-8.html
[86] U. S. Department of Homeland Security. *National Response Framework (NRF).* (January 2008). Washington, D.C., p. 2; accessed February 15, 2010 at: http://www.fema.gov/emergency/nrf/

organizational structure established in 2004 by the NRP (2004).

- NRP scope: The NRP reflected the experiences after the 9/11 attacks and the need to "understand and implement common incident management and response principles and to develop common planning frameworks.[87] The NRP expanded beyond the "Federal" focus of the 1992 FRP to attempt to guide response management across the Federal, State and local levels of government plus the participating private sector.

- Consolidation of Federal plans: The NRP integrated the following hazard-specific and stand-alone Federal plans which continue to be consolidated within the NRF:

  - The National Contingency Plan, used for major HAZMAT incidents, particularly maritime oil spills, in the U.S.

  - The Federal Radiological Emergency Response Plan, a plan originally for nuclear technological incidents, especially related to nuclear power plants.

  - Terrorism response plans from several Federal departments and agencies.

- Lessons learned from the 2005 Hurricane season: Preliminary lessons derived from analysis of response to Hurricanes Katrina and Rita were incorporated into a revised 2006 version of the NRP. Further discussions and analysis of the documents provided the motivation to incorporate needed changes into a new NRF instead of a "Plan." It is intended to be fully national in focus, clearly define roles and responsibilities for all parties involved in response, and establish a response framework for all hazards and all sector emergency management.

○ NRF Core Document content:[88] The "all-hazards" guidance includes a Core Document, which explains overall management and coordination of response and recovery efforts.

- The Core Document includes the following chapters:

  - Roles and Responsibilities – Who is involved with

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[87] U. S. Department of Homeland Security. *National Response Framework (NRF).* (January 2008). Washington, D.C., p. 2; accessed February 15, 2010 at: http://www.fema.gov/emergency/nrf/

[88] U.S. Department of Homeland Security. NRF Resource Center; accessed on February 15, 2010 at: http://www.fema.gov/emergency/nrf/

emergency management across all levels of government and across all sectors.

- Response Actions – The collective national effort for emergency response.
- Response Organization – How the nation is organized to implement response actions.
- Planning: A Critical Element of Effective Response – The importance of planning and the elements of the national planning structures.
- Additional Resources – The evolving resources provided through a web site managed by the NRF Planning Center at http://www.fema.gov/emergency/nrf/ are intended to support all components of the NRF.

- NRF Annexes and Guides: The NRF Core Document is complemented by the Emergency Support Function (ESF), Support Annexes, Incident Annexes, and the Response Partner Guides.

  - Emergency Support Function Annexes: The ESF Annexes each_group Federal resources and capabilities into functional areas that are commonly needed in a national response. With the expanded focus beyond that of the NRP and FRP, additional ESFs have been added. The full list of the NRF ESFs follows:
    - Transportation
    - Communications
    - Public Works and Engineering
    - Firefighting
    - Emergency Management
    - Mass Care, Emergency Assistance, Housing and Human Services
    - Logistics Management and Resource Support
    - Public Health and Medical Services
    - Search and Rescue
    - Oil and Hazardous Materials Response
    - Agriculture and Natural Resources
    - Energy
    - Public Safety and Security
    - Long-term Community Recovery
    - External Affairs.

- Support Annexes: Support Annexes describe essential supporting guidance that is commonly relevant to all incidents. Support annexes in the NRF include:
  - Critical Infrastructure and Key Resources
  - Financial Management
  - International Coordination
  - Private-Sector Coordination
  - Public Affairs
  - Tribal Relations
  - Volunteer and Donations Management
  - Worker Safety and Health.

- Incident Annexes: Incident Annexes in the NRF address the unique aspects of response to the following seven broad incident categories:
  - Biological
  - Catastrophe
  - Food and Agriculture
  - Mass Evacuation
  - Nuclear/Radiological
  - Cyber
  - Terrorism Law Enforcement and Investigation.

- Response Partner Guides: As of February 2010 there are no Response Partner Guides available on the NRF Resource Center Web Site.[89]

- National Infrastructure Protection Plan (2009)[90]: The 2009 National Infrastructure Protection Plan (NIPP) provides a unifying platform for the integration of a wide range of efforts for the enhanced protection and resiliency of the nation's 18 Critical Infrastructure and Key Resource (CI/KR) Sectors, promoting an eventual single national program. The 2009 NIPP replaces the 2006 version and reflects changes and updates to program elements and concepts. The revised NIPP integrates the concepts of resiliency and protection, and broadens the focus of NIPP-related programs and activities to an all-hazards environment.

  - The overarching goal of the NIPP is to build a safer, more secure, and more resilient America by preventing, deterring, neutralizing, or mitigating the effects of deliberate efforts by terrorists to destroy,

[89] NRF Resource Center Web Site. accessed February 15, 2010 at: http://www.fema.gov/emergency/nrf/responsepartnerguides.htm
[90] Department of Homeland Security. National Infrastructure Protection Plan. (2009), Executive Summary; accessed February 15, 2010 at : http://www.dhs.gov/xlibrary/assets/NIPP_Plan.pdf,.

incapacitate, or exploit elements of the nation's CIKR and to strengthen national preparedness, timely response, and rapid recovery of CIKR in the event of an attack, natural disaster, or other emergency.

- Healthcare/Public Health is designated as one of the 18 Critical Infrastructure and Key Resource Sectors with the Department of Health and Human Services as the Sector-Specific Agency responsible for developing and implementing a Sector-Specific Plan (SSP). A SSP is expected to detail the application of the NIPP framework to the unique characteristics and conditions of the sector, and the Healthcare and Public Health SSP was promulgated in May 2007.[91] It establishes the relationship between the government and private sector for protecting the sector from all hazards through a process of identifying and prioritizing healthcare and public health assets, assessing risk, implementing protective programs and measuring the effectiveness of risk informed interventions.

Principles for Emergency Managers

Since the initial descriptions of Comprehensive Emergency Management, with its implicit principles, multiple sources have recognized the need for emergency management to be better described as a professional discipline. A distinct profession, as noted earlier in this lesson, is commonly delineated through the description of its "principles." [92] In March of 2007, Dr. Wayne Blanchard, Program Manager of FEMA's Emergency Management Higher Education Project, convened a working group of emergency management practitioners and academics to consider principles of emergency management. This project was prompted by the realization that while numerous books, articles and papers referred to "principles of emergency management", nowhere in the literature on the subject was there an agreed upon definition of these principles. The group agreed on eight "principles for emergency managers" (see Textbox 1.1.3.2). The reader is encouraged to compare these with the authors' Principles of Comprehensive Emergency Management (CEM), derived by the authors from the original CEM publication, presented in Textbox 1.1.2.3

[91] Department of Health and Human Services. *Healthcare and Public Health Sector Specific Plan*. (2007); accessed February 15, 2010 at: http://www.hhs.gov/aspr/opeo/cip/healthssp_08_508.pdf

[92] Principle: Fundamental concept that is a basis for developing core concepts, guiding reasoning, and shaping conduct.

Textbox 1.1.2.8 "PRINCIPLES of EMERGENCY MANAGEMENT"[93]

Comprehensive – emergency managers consider and take into account all hazards, all phases, all stakeholders and all impacts relevant to disasters.
Progressive – emergency managers anticipate future disasters and take preventive and preparatory measures to build disaster-resistant and disaster-resilient communities.
Risk-driven – emergency managers use sound risk management principles (hazard identification, risk analysis, and impact analysis) in assigning priorities and resources.
Integrated – emergency managers ensure unity of effort among all levels of government and all elements of a community.
Collaborative – emergency managers create and sustain broad and sincere relationships among individuals and organizations to encourage trust, advocate a team atmosphere, build consensus, and facilitate communication.
Coordinated – emergency managers synchronize the activities of all relevant stakeholders to achieve a common purpose.
Flexible – emergency managers use creative and innovative approaches in solving disaster challenges.
Professional – emergency managers value a science and knowledge-based approach based on education, training, experience, ethical practice, public stewardship and continuous improvement.

[93] Blanchard, Wayne. Principles of Emergency Management Supplement; accessed February 15, 2010 at: http://www.training.fema.gov/EMIWeb/edu/emprinciples.asp

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Lesson 1.1.3 Emergency Management Concepts from Research and Standards

Lesson Objectives

- *List important sources of research for the discipline of Emergency Management.*
- *Explain why the disaster research findings are important to the development of an emergency management program and incident management activities.*
- *Summarize the foundational concepts that form the basis for organizing and conducting an emergency management program.*
- *List important standards and regulations related to healthcare emergency management.*
- *Define the following as they relate to healthcare emergency response: qualification, certification, credentialing, accreditation, and privileging.*

Introduction

Beyond the guiding documents presented in the previous lesson, there are critical sources of information for the healthcare emergency manager. These sources provide much of the foundational construct upon which "all hazards" healthcare emergency management is constructed. Many of these concepts are expanded upon in later sections of this text.

A body of literature exists outside of traditional medical literature that provides critical considerations for the healthcare system EM program. Much of this is contained within natural hazards and disaster sociology research.

Key research relevant to general Emergency Management may be found in many disciplines. Predominant themes will be summarized in this lesson. The primary disciplines that contributed to the body of research that underlies the core concepts of emergency management are disaster sociology, natural hazards research, and management science.

The Disaster Sociology and Natural Hazards Research

The field of Disaster Sociology provides organized research into human behavior during crises and has been ongoing for many decades after originating in the 1940s. Similarly, Natural Hazards Research has provided relevant information for Emergency Management by eliciting information related to the effects of natural hazard impacts and organizational vulnerabilities. Because these two disciplines have been intertwined in many of the research efforts, research findings from across these disciplines are presented together.

While much of this material was published decades ago, the research

Disaster research has emphasized that the issues that challenge an organization during an incident can come from within the organization (i.e. response demands) as well as from the hazard impact itself.

findings remain very relevant and lessons offered by history are invaluable for the future. The works of major contributors such as Enrique Quarantelli, Thomas Drabek, Russell Dynes, and Kathleen Tierney are available in the public domain from the Disaster Research Center (University of Delaware)[94] and the Natural Hazards Research and Information Applications Hazards Center (University of Colorado).[95] Information from these sources is presented and referenced throughout the text, but several relevant concepts are presented here:

- Functional organization: The idea of organizing emergency operations plans around functions and not particular hazards was the result of contributions from the disaster sociology research community. Researchers argued that in examining a wide range of disaster responses, the same types of activities need to be performed regardless of the cause of the disaster. These "response-generated demands" are created by the forces at play within organizations as they mobilize and respond. Critical activities such as decision-making, communication, interagency coordination and logistical issues needed greater attention. While "hazard-generated demands," such as search and rescue, medical care, evacuation, and so forth, were also important and more specific to the type of disaster, they were only part of what was going on during the response to a disaster.[96] When these actions are categorized and recognized as both important and requiring specific management elements, incident response begins to appear more orderly and more consistent from incident to incident (see textbox 1.1.3.1 and 1.1.3.2). When this sorting of incident demands is considered in light of ICS, it becomes apparent that "hazard generated demands" are generally addressed by the Operations Section, while "response generated demands" are primarily addressed across the three support section of ICS: Logistics, Planning, and Administration/Finance.

[94] Information on the Disaster Research Center; accessed February 15, 2010 at :http://www.udel.edu/DRC

[95] Information on the Natural Hazards Center; accessed February 15, 2010 at: http://www.colorado.edu/hazards/

[96] Adapted from: Quarantelli EL. *Major Criteria for Judging Disaster Planning and Managing and Their Applicability in Developing Societies* (1998). Disaster Research Center, University of Delaware; Newark, Delaware; accessed February 15, 2010 at: http://dspace.udel.edu:8080/dspace/bitstream/19716/286/1/PP268.pdf

Textbox 1.1.3.1

Categorizing Incident Response Needs

The “tasks” necessary to effectively manage a large, complex, or very unusual medical incident may be separated into two distinct categories, an observation first presented by the disaster researcher Quarantelli (see Exhibit 1.1.3.1).

Hazard generated demands*: Needs generated by the hazard impact itself and perceived as a responsibility of the incident response system. For example, the need to provide care of patients from an evacuated nursing home would constitute a hazard-generated demand for a jurisdiction. This term is an adaptation of “agent generated demand” (using the emergency management term “hazard” instead of “agent”).

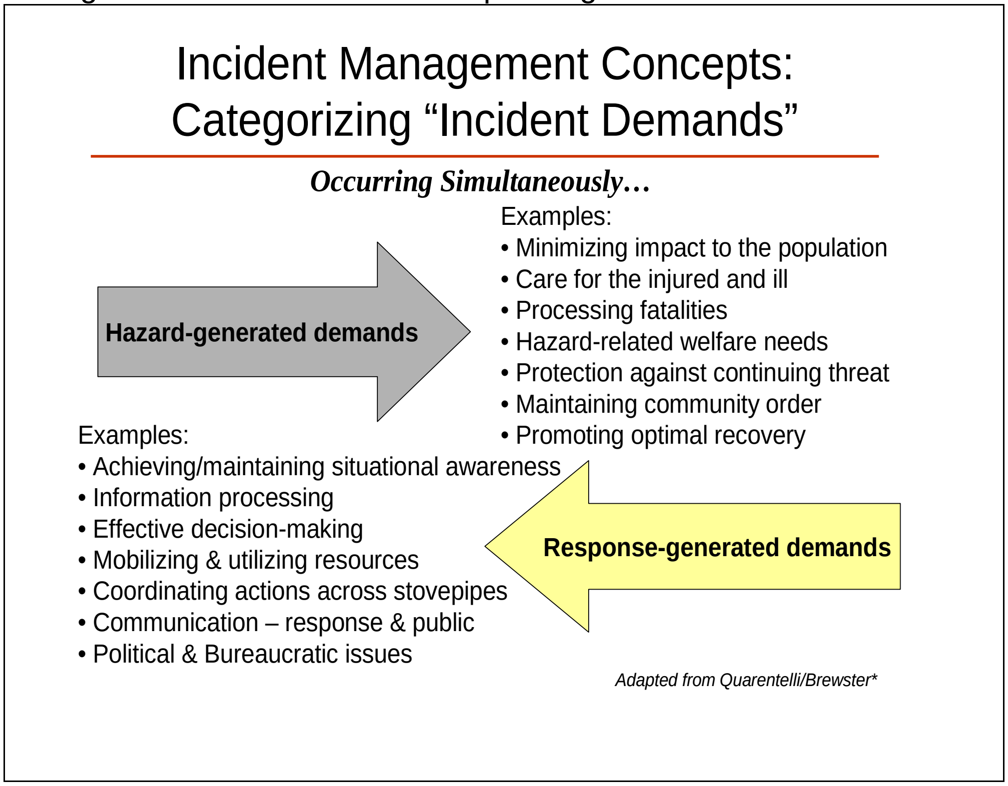
Response generated demands: The needs created by the attempt to organize responders. *(Adapted from Dynes et al, 1981)*[97] For example, the need to disseminate information across the multiple response organizations is a response generated demand that requires methodology that differs from day-to-day operations.

* Quarantelli and colleagues called these “agent generated”; this text uses “hazard generated” to be consistent with current EM terminology

The response to any hazard impact can itself create demands that need to be addressed. For example, information processing amongst responders requires specific processes and procedures regardless of hazard type.

[97] Ibid

Exhibit 1.1.3.1: Demands encountered in Incident Response by categories of Hazard versus Response generated.[98]



- Problem-solving, distributed approach: The disaster sociology research helped explain why the previous military "top-down" approach that typified the civil defense era was not a realistic model for *civilian* emergency management systems. A problem-solving approach was advanced that emphasized that response capabilities are enhanced by bringing different disciplines together in common planning and rehearsal activities, by personal contact, by liaison activities during incidents, and by establishing shared facilities.[99,100]

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[98] Adapted from:
- Quarantelli, EL. Major criteria for judging disaster planning and managing and their applicability in developing societies (1998). Disaster Research Center, University of Delaware; Newark, Delaware; accessed June 1, 2006. No longer available through the Internet.
- Brewster, P. Standards of practice for delivering emergency health and medical services. Presented June 25, 2003 at the Working Group meeting for the project: Medical Surge Capacity, The CNA Corporation, Arlington, Virginia.

[99] Drabek TE. *Managing the Emergency Response* (1985). Public Administration Review 45 (Special Issue): 85-92.

[100] Dynes RR. *Community Emergency Planning: False Assumption and Inappropriate Analogies* (1990). Preliminary Paper 145, Disaster Research Center, University of Delaware; Newark, Delaware; accessed February 15, 2010 at: http://dspace.udel.edu:8080/dspace/handle/19716/517

- Understanding crisis behavior: The behavior of people as individuals, members of families and small groups, and as organizations during disasters has been studied in depth by the above researchers and other sociologists. Social science research has demonstrated that a major emergency or disaster is not just a "big accident." Rather, there are fundamental differences from everyday professional and organizational relationships, functions that must be performed, and effectiveness in using everyday systems.[101] Human behavior under stress, the behavior of emergent organizations, and many other topics have been researched. [102,103] These are very important to fully understanding the science and practice of emergency management. Many of these research findings are incorporated into concepts presented throughout this text.

- Clarifying the difference between "disaster planning" and "disaster managing": An important observation by a pre-eminent disaster researcher, Enrique Quarantelli and his colleagues (see Textbox 1.1.3.2) was differentiating between disaster planning and disaster management. In this educational document, the term "disaster planning" translates to the **mitigation and preparedness planning** during "emergency management program activities," and the term "disaster managing" is now referred to as "**incident management.**" Incident management incorporates the important concept of "**incident action planning**," which occurs during the emergency response and recovery phases. The distinction between these two types of planning appears to be unclear to many professionals new to the field of healthcare Emergency Management as evidenced by attempts to address response utilizing day to day preparedness planning processes and procedures.

Disaster research distinguishes between disaster planning (preparedness and mitigation) and disaster management (response and recovery).

[101] Quarantelli EL, Verta AT, Tierney KJ. Delivery of Emergency Medical Services in Disasters (1977). Preliminary Paper #46, Disaster Research Center, Ohio State University, Columbus OH.
[102] Quarantelli EL. Organizational Behavior in Disasters and Implications for Disaster Planning. The Disaster Research Center Report Series 18 (1985), Disaster Research Center, Newark, Delaware.
[103] Quarantelli EL. A Half Century Of Social Science Disaster Research: Selected Major Findings and Their Applicability. Preliminary Paper #336, Disaster Research Center, Newark, Delaware; accessed February 15, 2010 at: http://dspace.udel.edu:8080/dspace/bitstream/19716/297/1/PP%20336.pdf

Textbox 1.1.3.2

"Disaster Planning and Managing" [104]
Enrique Quarantelli

"Our starting point is that what is crucial. [It] is not planning or managing, but good planning and managing. It is after all possible to have bad instances of both. Thus, to assess in an intelligent way the preparedness planning for and the managing of disasters requires asking the question: what is good planning and managing?

Good community disaster planning must:

- Focus on the planning process rather than the production of a written document.
- Recognize that disasters are both quantitatively and qualitatively different from minor emergencies and everyday crises.
- Be generic rather than agent specific.
- Be based upon emergent resource coordination and not a command and control model.
- Focus on general principles and not specific details.
- Be based on what is likely to happen.
- Be vertically and horizontally integrated.
- Strive to evoke appropriate actions by anticipating likely problems and possible solutions or options.
- Use the best social science knowledge possible and not myths and misconceptions.
- Recognize that crisis time disaster planning and disaster managing are separate processes.

Good disaster managing must:

- Recognize correctly the difference between agent and response generated needs and demands.
- Carry out generic functions in an adequate way.
- Mobilize personnel and resources in an effective manner.
- Involve proper task delegation and division of labor.
- Allow the adequate processing of information.
- Permit the proper exercise of decision making.
- Focus on the development of overall coordination.
- Blend emergent aspects with established ones.
- Provide the mass communication system with appropriate information.
- Have a well functioning Emergency Operations Center (EOC)."

[104] Quarantelli EL. M*ajor Criteria for Judging Disaster Planning and Managing Their Applicability In Developing Countries* (1998). University of Delaware Disaster Research Center, DRC Publication 268; accessed February 15, 2010 at: http://dspace.udel.edu:8080/dspace/bitstream/19716/286/1/PP268.pdf

- Addressing cultural sensitivity and understanding: Disaster sociologists have for decades focused upon the socio-cultural issues that affect disaster response actions.[105] Experience has long demonstrated the impact of cultural and linguistic issues on healthcare delivery if they are not appropriately addressed. Relatively recent research, extending beyond the sociology domain, has focused upon issues captured under the currently vogue phrase "cultural competence."[106] Recent research in this area stems from medical and mental health investigation into effective delivery of medical and healthcare services in a multi-cultural society. Published medical research has noted that cultural, language and other differences between providers and patients can be exacerbated by the power dynamic, the knowledge gap, and similar aspects of the physician-patient relationship. Many of these issues within the physician-patient relationship are also critical factors in emergency management and incident response, potentially complicating effective interaction between managers/responders and the people affected by the hazard impact. Medical authors have noted the importance of recognizing that the provider/patient dynamic may be affected by "various sociocultural mismatches between patients and providers, including providers' lack of knowledge regarding patients' health beliefs and life experiences, and providers' unintentional and intentional processes of racism, classism, homophobia, and sexism."[107]

General "principles" for cultural competence have been proposed (see Textbox 1.1.3.3). Other authors have noted, however, the difficulty in objectively measuring attainment of 'cultural competence' (especially when the traditional definition of competency is utilized from the management and education literature – see next section.)[108]

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[105] Dynes RR. The Socio-Cultural and Behavioral Context of Disasters and Small Dwellings (1990). Preliminary Paper #155, Disaster Research Center, University of Delaware, accessed February 15, 2010 at: http://dspace.udel.edu:8080/dspace/handle/19716/527

[106] National Prevention and Information Network. *Cultural Competence*. Centers for Disease Control and Prevention web site; accessed February 15, 2010 at: http://www.cdcnpin.org/scripts/population/culture.asp#4

[107] Tervalon M, Murray-Garcia J. Cultural Humility versus Cultural Competence: A critical distinction in defining physician training outcomes in multicultural education *Journal of Health Care for the Poor and Underserved* (May 1998). 9;2: page 117.

[108] Tervalon M, Murray-Garcia J. *Cultural Humility versus Cultural Competence: A critical distinction in refining physician training outcomes in multicultural education* (May 1998). Journal of Health Care for the Poor and Underserved; 9(2); page 117-125.

Textbox 1.1.3.3

Cultural Competence:
Principles upon which it is based[109]

1. Define culture broadly.
2. Value clients' cultural beliefs.
3. Recognize complexity in language interpretation.
4. Facilitate learning between providers and communities.
5. Involve the community in defining and addressing service needs.
6. Collaborate with other agencies.
7. Professionalize staff hiring and training.
8. Institutionalize cultural competence.

Terminology Alert!

Culture: In relation to cultural sensitivity and cultural competency, "culture" encompasses the integrated elements that shape thinking and behavior of racial, ethnic, religious, or social groups. Cultural elements include geographic and economic influences, historical thoughts and experience, language, and current customs, beliefs, values, and institutions.

- Risk Communication: The modern discipline of ***Risk Communication*** (see terminology textbox) best addresses one of the critical roles for the Public Information Officer: informing the public with actionable information that appropriately shapes behavior and addresses the physical, psychological, political, and economic risks created by a hazard impact. This relatively new discipline focuses on developing and conveying the most effective information and guidance to the public. [110,111,112]

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[109] Health Resources and Services Administration/DHHS. *Mitigating Health Disparities Through Cultural Competence* (August 2002); accessed February 15, 2010 at: http://hab.hrsa.gov/publications/august2002.htm

[110] U.S. Department of Health and Human Services Substance Abuse and Mental health Services Administration (SAMHSA). *Communicating in a Crisis: Risk Communication Guidelines for Public Officials*, 2002; accessed February 15, 2010 at http://www.riskcommunication.samhsa.gov/

[111] Johns Hopkins Center for Public Health Preparedness, Training Management System. *Risk Communication Strategies for Public Health Preparedness;* on-line training; accessed February 15, 2010 at: http://www.jhsph.edu/preparedness/training/online/riskcomm.html

[112] Johns Hopkins Center for Public Health Preparedness. Training Management System. *Risk Communication During a Time of Crisis: How to Talk to People About*

Terminology alert!

Risk Communication: The process of providing concise, comprehensible, credible information, as needed to make effective decisions regarding risks. In emergency management/incident response, risk communication is generally considered to be providing a service to those outside of the incident command system, with the goal of influencing behavior.[113]

The Management Research

An important point to acknowledge is that **Emergency Management is a "management science**." Much has been written about the tasks that emergency managers must accomplish within their duties, about the context in which they operate, the human behavior they must address under incident conditions, and other topics. It is important to recognize, however, that these all must be addressed through consistent, overarching management concepts.

Additional research relevant to EM can be found in the managerial sciences. Some of this material is from the business management and the systems engineering disciplines.

As a research area, management of organizations has been studied for many decades, ever since management was recognized by Peter Drucker long ago as "the least known and the least understood of our basic institutions."[114] Many of the important research findings and principles that were developed for other areas of management science are applicable to emergency management and incident command. Application of these concepts in the emergency context requires some modification for the relatively unique emergency and disaster context (rapid pace, greater uncertainty, high stakes and dynamic situation), but the principles are directly applicable.

Systems theory proposes that organizations be viewed in terms of their components, their relationships with other organizations, and their dynamic changing environments.

Organizational theory and function: Management researchers and practitioners have been striving for decades to determine how organizations may optimally function. Research foci have included how the organization: 1) interacts externally; 2) manages internally; and 3) optimally accomplishes its outputs (products and/or services)

Disasters; on-line training; accessed February 15, 2010 at: http://www.jhsph.edu/preparedness/training/online/crisis_communication.html

[113] Adapted from: Baruch Fischhoff. Risk Perception and Risk Communication, in D. Kamien (ed) *The McGraw-Hill Handbook of Terrorism*, August 11, 2004.

[114] Drucker P. *The Practice of Management*.(1954), Harper Business, New York, NY. Chapter 2, page 6.

to meet demands. Research conclusions are presented in appropriate locations throughout this text. Some of the more important and longstanding management concepts are briefly summarized:

- System theory: System theory (see Textbox 1.1.3.4) revolutionized how organizations and the organizational change processes are understood.[115] The full complexity of the environment of any organization or system, the people and personal motivations that make up such a system, and the difficulty of effecting change form the basis of this understanding. The system theory sees organizations as complex and always dynamic.

  - System theory & change: System theorists understand that there is a politics of change in large organizations and that fostering change has much to do with organizational culture.

  - Open versus closed systems in system theory: System theory does not view most organizations as closed systems or independent of external forces. Instead, organizational systems are recognized as having interdependent relationships with many defined components: the external environment, the individuals inside the system, the relationships that generate cooperation or conflict, and others. This “open system” recognizes the goals of individual members can be as important as any one singular organizational purpose declared by those in leadership positions. As such, system theory focuses on the complexities of open systems and the necessity for organizations to adapt to ever-changing environments. It seeks to understand the social character of dynamic system interrelationships and their impact upon outcomes. A fundamental principle that characterizes open systems is that objectives can be pursued through a variety of methods and means and there is no single approach that will always produce the desired results.[116]

[115] This body of thought evolved over many decades in the 20th century. An author credited with consolidating much of the thought was Ludwig von Bertalanffy. An adapted summary of his teaching is provided in Textbox 1.1.3.5

[116] Katz D., Kahn R. *Organizations and the System Concept*. Classics of Organization Theory (1966). Schafritz J., and Ott S.J. Belmont, Wadsworth - Thomson Learning.

Textbox 1.1.3.4

System Theory: A Brief Summary[117]

System theory is the trans-disciplinary study of the abstract organization of phenomena, independent of their substance, type, or spatial or temporal scale of existence. It investigates the principles common to all complex entities and the models that can be used to describe them. A system can be said to consist of four things:

1. Objects – the parts, elements, or variables within the system. These may be physical or abstract or both, depending on the nature of the system.
2. Attributes – the qualities or properties of the system and its objects.
3. Internal relationships among its objects.
4. External relations with the environment.

A system, then, has multiple components and forces that affect one another within an environment and form a larger pattern that is distinguished from any of the parts. The fundamental systems-interactive paradigm of organizational analysis features the continual stages of input, throughput (processing), and output, which demonstrate the concept of open versus closed systems. A closed system does not interact with its environment. It does not take in information and therefore is likely to atrophy, that is, to vanish. An open system receives information, which it uses to interact dynamically with its environment. Openness increases its likelihood to survive and prosper.

- Management by Objectives: This management concept was first described by Peter Drucker in his 1955 book "The Practice of Management".[118] It was also described and promulgated by George S. Odiorne in his 1965 book *Management by Objectives*.[119] There are many advantages to using this practice, including facilitating the use of pro-active processes and

[117] Adapted from: von Bertalanffy L. *General Systems Theory* (1968). New York: Braziller; accessed February 15, 2010 at: http://www.panarchy.org/vonbertalanffy/systems.1968.html
[118] Drucker P. *The Practice of Management*.(1954), Harper Business, New York, NY.
[119] Odiorne, G.E. *Management by Objectives* (1965). Pitman Publishing Corp. New York. Described in Sydänmaanlakka P. Intelligent Leadership and Leadership Competencies: Developing a leadership framework for intelligent organizations (2003). Doctoral Dissertation, Helsinki University of Technology, Department of Industrial Management; accessed February 15, 2010 at: http://lib.tkk.fi/Diss/2003/isbn9512263602/isbn9512263602.pdf

establishing a basis for applying measures of effectiveness. Management by objective is a key management concept across all phases of emergency management; it is discussed in detail as it applies to incident management later in this text.

- Span of Control: This important management issue was described and scientifically explored in published literature as afar back as the 1930s.[120] Graicunas and later researchers[121] recognized the complex types and number of relationships between a manager and subordinates and evolving groups of subordinates. Their writings cautioned against a large span of control put in place for efficiency, for empire-building, or for limiting the management overhead (see textbox 1.1.3.5). Graicunas suggested that the maximum number of subordinates should be five and probably four in most cases. These figures were tempered by considerations of the scope and scale of the work involved and for which the subordinate was responsible.

Textbox 1.1.3.5

Span of control: Cautions from Early Researchers[122]

"Graicunas summed up the prevailing view of the reason for limiting the span of control in these words: '[O]ne of the surest sources of delay and confusion is to allow any superior to be directly responsible for the control of too many subordinates.'
Urwick put it in stronger terms writing: 'There is nothing which rots morale more quickly and more completely than poor communication and indecisiveness -- the feeling that those in authority do not know their own minds. And there is no condition which more quickly produces a sense of indecision among subordinates or more effectively hampers communication than being responsible to a superior who has too wide a span of control (p.43).'

The researchers have also described the range of relationship types between a manager and subordinates that are responsible

[120] Graicunas, VA, (Gulick L, Urwick LF *eds*) "Relationship in Organization" (pp.183-187) in *Papers on the Science of Administration (1937)*. Institute of Public Administration, Columbia University, New York, pp 183-187 as described in Nickols F. The Span of Control and the Formulas of V.A. Graicunas. accessed October 27, 2009 at: http://home.att.net/~OPSINC/graicunas.pdf
[121] Urwick LF. "The Manager's Span of Control." (pp.39-47) *Harvard Business Review* (May-June 1956); pp39-47.
[122] The insert is quoted from Nickols F. The Span of Control and the Formulas of V.A. Graicunas; accessed October 27, 2009 at: at http://home.att.net/~OPSINC/graicunas.pdf

for independent work or units. These include:

- Direct single relationships: the relationship between the manager and a single unit.

- Cross relationships: the relationship between the subordinate units.

- Direct group relationships: the relationships between groups of subordinates and the manger.

Because each unit may have multiple tasks that create varying "groups" with their own cross relationships, and each has a direct relationship with the manager for specific supervision, effective span of control can be quickly exceeded. The formulas for these relationships and the math calculations demonstrate that in situations with subordinates conducting complex tasks, the relationships to be managed rise exponentially when the ratio of subordinates to the manager exceeds 4:1. This is the research basis for recommending the 3-7:1 ratio in ICS and other management guidance where complex tasks are being supervised. It should be noted that similar reasoning can be utilized to justify increasing the ratio when subordinate activities are relatively simple.

- <u>Managed or engineered degradation</u>: The broad concept of managed or engineered degradation is a central strategy for incident response and recovery when resources become scarce in relation to need. The concept was presented in Lesson 1.1.1. It is therefore critical to consider this strategy in most preparedness planning. The concepts have long been incorporated across engineering applications, including safety engineering,[123] systems engineering (commonly called "graceful degradation"[124]) and other engineering disciplines. This conceptual approach may be most widely understood in the design of crashworthiness in automobiles, where a series of failures are allowed (the bumper, the engine folding under the passenger compartment) so that the last element to fail is passenger compartment intrusion. The concept has also been referred to as "failure-tolerant control systems."[125] "All failure

[123] Roland HE, Moriarity B. *System Safety Engineering and Management, Second Edition* (1990). John Wiley & Sons, Hoboken, NJ.
[124] Melhart B, White S. *Issues in Defining, Analyzing, Refining, and Specifying System Dependability Requirements* (2000). 7th IEEE International Conference and Workshop on the Engineering of Computer Based Systems, pp.334.
[125] Stengel RF. *Intelligent Failure-Tolerant Control* (June 1991).IEEE Control Systems Magazine; accessed February 15, 2010 at: http://www.princeton.edu/~stengel/IFTCCSM1991.pdf

tolerant systems require some degree of robustness to protect against catastrophic failure; failure tolerance often can be improved by adaptivity in decision-making and control, as well as by redundancy in measurement and actuation."[126]

This managed degradation approach should be distinguished from recently published reports proposing the use of altered standards of care when healthcare needs exceed resource availability.[127] Engineered degradation involves the selection of certain procedures or processes over others that are considered less essential for preservation of overall organizational function. Some of these processes may have little to do with patient care and those that do may be applied equitably across all patient populations (i.e., no distinctions are made between patient classes). An example of this "modified delivery of healthcare" is the clinical decision to rapidly clean wounds and apply wet sterile dressings, deferring primary wound closure until all victims are assessed and more serious injuries have been treated. A non-clinical example may be the use of housekeeping personnel to assist in staffing facility entrances, maintaining perimeter security while degrading performance of some housekeeping functions.

- Altered or "crisis" standards of care: This approach may provide some similarities with managed degradation, but the application is procedurally very different. As presented by the IOM,[128] the altered level of care is structured by declared alteration in standards (see Textbox 1.1.3.6). In managed degradation, standards are not changed. Instead, modifications are made in specific procedures, individual resources, or timelines for provision of services. This provides the ability to be more selective, to be more objective, and to change rapidly as additional resources come on-line. The modifications attempt to maintain the usual medical outcomes while increasing capacity or providing a capability that is critically needed.

[126] Ibid
[127] *Altered Standards of Care in Mass Casualty Events* (April 2005). Prepared by Health Systems Research Inc. AHRQ Publication No. 05-0043. Agency for Healthcare Research and Quality, Rockville, MD.
[128] IOM (Institute of Medicine). *Guidance for establishing crisis standards of care for use in disaster situations: A letter report* (2009). The National Academies Press, Washington, DC.

Textbox 1.1.3.6

Recommendations from the IOM Crisis Standards of Care Report[129]

Recommendation 1: Develop Consistent State Crisis Standards of Care Protocols with Five Key Elements:
- A strong ethical grounding;
- Integrated and ongoing community and provider engagement, education, and communication;
- Assurances regarding legal authority and environment;
- Clear indicators, triggers, and lines of responsibility; and
- Evidence-based clinical processes and operations.

Recommendation 2: Seek Community and Provider Engagement.

Recommendation 3: Adhere to Ethical Norms during Crisis Standards of Care.

Recommendation 4: Provide Necessary Legal Protections for Healthcare Practitioners and Institutions Implementing Crisis Standards of Care.

Recommendation 5: Ensure Consistency in Crisis Standards of Care Implementation.

Recommendation 6: Ensure Intrastate and Interstate Consistency Among Neighboring Jurisdictions.

The concept of altered standards of care "generally is assumed to mean a shift to providing care and allocating scarce equipment, supplies, and personnel in a way that saves the largest number of lives in contrast to the traditional focus on saving individuals."[130] This therefore involves some of the same concepts involved in engineered degradation but is more expansive and can translate into the earlier use of more dramatic steps, such as the rationing of treatments or supplies or the selection of certain populations for treatment over others. It is preferable to focus on engineered degradation first, leaving the altered standards of care option as a last resort. In managing degradation of the medical care system, the care of patients should be a priority over most other system

[129] Ibid.
[130] *Altered Standards of Care in Mass Casualty Events* (April 2005). Prepared by Health Systems Research Inc. AHRQ Publication No. 05-0043. Agency for Healthcare Research and Quality, Rockville, MD.

activities, except for safety of staff and current patients. These concepts are discussed in much greater depth in Unit 4.

- Instructional research: Research into effective methods for developing, conducting, evaluating and revising education and training within organizations is very relevant. Concepts presented within "adult learning," Instructional System Design, and other relevant research areas related to training and education are critical to effective emergency management programs. These are presented in detail later in this Unit.

- Evaluation research: Findings from evaluation science are relevant to the objective evaluation of healthcare emergency management systems. These are presented in Module 4.2.

- Management terminology: As management science has evolved over the decades and is applied to multiple disciplines, management terminology has varied widely. To overcome potential confusion from terminology variations and to maintain terminology consistency across the many topic areas throughout this wide-ranging text, a detailed emergency management glossary was developed that supports this curriculum (see Unit 5).

All efficient organizations address prospectively how they will incorporate beneficial changes. This approach should be utilized for EM programs in healthcare systems. It must be more expansive than just individuals learning and include organizational learning.

- Organizational change: Organizational change is an essential issue in maintaining the effectiveness of any organization. Even if the organization is designed to operate in an optimal manner at its inception, the organization must adapt (i.e., "change") as its environment changes. Environmental change may be from market and labor conditions, business risks and opportunities, product and/or services demand, or evolution of hazard risks. The degree and rate of change may be characterized in many ways, from "adjustment" to "evolution" and even major "transformation."

  - Management approaches to change: Many varying approaches have been developed to accomplish change. Several became prominent within the U.S. medical establishment over the past two decades: Quality Assurance, Quality Improvement, Total Quality Management, and others.131 In pursuit of this goal, it may be more effective to consider the organization itself before focusing upon the specifics of change.

  - System theory and organizational change: Evaluation and organizational change was addressed in system theory. When

[131] Ahire SL, Landeros R, Golhartotal DY. *Quality Management: A Literature Review and an Agenda for Future Research. Production and Operations Management* (Summer 1995) Vol. 4, No. 3: 277-306.

organizational change and adaptation to essential operations becomes an organizational objective, defining the change needed and evaluating the success of implemented change involves many different types of program evaluation. This combination of qualitative, as well as quantitative, methods recognizes real world factors that indicate that a method that works well in one area may not work in another. The system theory approach to evaluation emphasizes the ability to adapt to a changing environment by tailoring evaluation styles to different components of the system in order to produce the most accurate and useful results.

- The learning organization: A prominent conceptual approach in management research addressing change within organizations views the goal as transforming the business or other entity needing change into a "learning organization." The term "learning organization" has been presented by a range of authors in the research literature. One of the earliest and best recognized descriptions is Peter Senge (see terminology textbox). While the terminology these authors use differs from that used in modern comprehensive emergency management (CEM), many of the conceptual descriptions such as "systems thinking"[132] are consistent with the "systems approach to emergency management" described earlier.

- This text covers evaluation and organizational change in much greater depth in Unit 4.

[132] Senge, P. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization.* Classic Readings in Organizational Behavior. S. J. Ott, S. J. Parkes and R. B. Simpson. Belmont, California, Thomson Learning: pp. 484 - 491.

Terminology alert!

Learning organization: An **organization** that conducts continuous evaluation of its experience and transforms that experience into lasting improvements in performance.[133] This is accomplished through change to objectives, structure, process, personnel qualifications (including competencies, which describe knowledge/skills/abilities), facilities, equipment, supplies and other parameters. This “learning process” is accessible to the whole organization and relevant to its core mission and objectives.

Assuring Qualified and Competent Personnel

Competencies were originally established to characterize knowledge, skills, and abilities relevant to a specific position. They have come under increasing scrutiny by response systems as a valuable tool.

A key issue in healthcare emergency management is assuring that personnel functioning in emergency response and recovery positions are qualified and trained to perform their designated tasks. Since many of these positions have activities that vary significantly from everyday healthcare practice and performance is required on very short notice, this issue requires careful attention. Concepts have been promulgated in the research and management literature to address this issue.

- Competencies: Competency (see terminology textbox) is an important concept in developing and managing personnel resources in any emergency management system. Competency concepts and modeling originated in business management research and has evolved extensively over the past 25 years as other disciplines began adopting the practice.[134] These are discussed extensively in Lesson 1.5.6.

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[133] Adapted from Senge, P. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization.* Classic Readings in Organizational Behavior. S. J. Ott, S. J. Parkes and R. B. Simpson. Belmont, California, Thomson Learning: pp. 484 - 491.

[134] Newsome S., Canto V.M., and Day A.L. *Leader Competencies: Proposing a Research Framework* (2003). Canadian Forces Leadership Institute & Centre for Leadership Excellence, Saint Mary’s University. Nova Scotia.

Terminology alert!

Competency: A specific knowledge element, skill, and/or ability that is objective and measurable (i.e., demonstrable) on the job. It is required for effective performance within the context of a job's responsibilities and leads to achieving the objectives of the organization.[135]

Competencies associated with the EM program should be distinguished from day-to-day organizational competencies and should also be established within the appropriate context (e.g. preparedness versus response and recovery competencies).

The relationship between competencies, qualifications, certification, credentialing, privileging (see terminology textbox), and accreditation is important to recognize and understand.

"Qualification" (singular) generally refers to the individual requirements for a specific position, and the term is commonly used to refer to pre-requisites. Qualifications include education, training, experience, physical or medical fitness, as well as competencies. Unlike competencies, most other categories of qualification are more general (e.g., four year college degree, etc.) and they do not necessarily relate as directly to performance within the relevant position(s). "Qualification" (aggregate) is commonly used to indicate that someone meets a position's requirements, including pre-requisites, mandatory education and training, and competencies (see terminology textbox).

Terminology alert!

Qualification: A term indicating that an individual has met all the requirements of training plus the requirements for physical and medical fitness, psychological fitness, strength/agility, experience, or other necessary requirements/standards for a position. **"Qualification" therefore indicates that the individual possesses all the competencies required for the response position. In some job categories, qualification is demonstrated by obtaining a professional license.**[136,137,138]

[135] Adapted from Barbera JA, Macintyre AG, Shaw GL, Seefried V, Westerman L., DeCosmo S. V*HA-EMA Emergency Response and Recovery Competencies: Competency Survey, Analysis and Report*; accessed February 15, 2010 at http://www.gwu.edu/~icdrm

[136] National Society of Professional Engineers. Licensure and Qualification for Practice; accessed February 15, 2010 at http://www.nspe.org/GovernmentRelations/TakeAction/PositionStatements/ps_lic_qual_prac.html

"Certification" (see terminology text) is a term commonly used to indicate that personnel have passed an evaluation by an authoritative source that attests to the successful outcome of the evaluation. The term is also sometimes used to indicate a positive outcome to equipment evaluations. The term "accreditation" is commonly a term used to indicate that an organization has been designated as passing an evaluation of its capabilities relevant to the accreditation process. Healthcare personnel are most familiar with the accreditation process conducted by The Joint Commission. Academic centers are concerned about the accreditation by educational organizations and by medical, nursing and other accrediting organizations. In the NIMS arena (see terminology text), accreditation refers more specifically to designating entities that can credential individuals for response activities.

Terminology alert!

Certification: Certification "entails authoritatively attesting that individuals meet professional standards for the training, experience, and performance required for key incident management functions. Credentials may be issued as a result of certification through testing or evaluation.[139] "Certification, in other words, involves measuring an individual's competence through a testing or evaluation process. Personnel are certified by their discipline's relevant certifying authority."[140] In ICS, the term certification may also be applied to equipment (verifying its appropriateness and adequacy for the intended use).

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[137] American Society for Clinical Laboratory Science (ASCLS). Personnel Licensure; accessed February 15, 2010 at http://www.ascls.org/jobs/grads/personnel_licensure.asp

[138] Federation of State Medical Boards. About State Medical Boards, accessed February 15, 2010 at: http://www.fsmb.org/smb_overview.html

[139] FEMA NIMS Integration Center. *National Emergency Responder Credentialing System(Questions and Answers);* accessed February 15, 2010 at:: http://www.fema.gov/txt/emergency/nims/credent_faq.txt

[140] Credentialing the Nation's Emergency Responders: Working Group Guidelines – Draft Version 1.6 (November 2005), NIMS Integration Center, Federal Emergency Management Agency, Washington DC.

Terminology alert!

Accreditation: Empowerment provided to an organization through legislation, statute, or regulation from an appropriate local, State, Tribal, or Federal government agency authorizing the organization to credential personnel for incidents in which the organization participates. According to the NIMS Integration Center, accreditation refers to the "empowerment of certifying/qualifying organizations with the authority to declare an individual capable of performing critical tasks and capabilities."[141]

"Credentialing" as it is currently used in emergency management (see terminology textbox) refers to providing documentation attesting to an individual's relevant certifications and identity confirmation. It does not indicate that the individual has a "ticket" to enter and participate in a response. "Privileging" (see terminology textbox) is a term commonly used in everyday healthcare practice to indicate that a healthcare practitioner has permission to conduct specific activities within an organization's area of responsibility. It is also helpful to use this term to describe a similar status during emergency response. The general ICS term of "assigned" may be used in non healthcare settings to indicate that someone is approved for badging and entering into the incident operations.

Terminology alert!

Credentialing: According to NIMS: "Credentialing involves providing documentation that can authenticate and verify the certification and identity of designated incident command staff and emergency responders. This system helps ensure that personnel representing various jurisdictional levels and functional disciplines possess a minimum common level of training, currency, experience, physical and medical fitness, and capability for the incident management or emergency responder position they are tasked to fill."[142]

[141] Credentialing the Nation's Emergency Responders: Working Group Guidelines – Draft Version 1.6 (November 2005), NIMS Integration Center, Federal Emergency Management Agency, Washington DC.
[142] Credentialing the Nation's Emergency Responders: Working Group Guidelines – Draft Version 1.6 (November 2005), NIMS Integration Center, Federal Emergency

Terminology alert!

Privileging: The process where appropriately credentialed personnel (see credentialing) are accepted into an incident to participate as an assigned resource in the response. This process may include both confirmation of a responder's credentials and a determination that an incident need exists that the responder is qualified to address. Privileging is associated with a separate process, badging, which indicates that a person has been privileged to access a specific incident or to access a specific location.

The concepts of certification, qualification, credentialing, privileging, and accreditation are important emergency management concepts related to competencies and the determination of "competent" personnel.

Relevant Emergency Management Standards

Drawn from research, experience and past guidance documents, multiple sets of standards have been developed that are relevant to healthcare emergency management (see Textbox 1.1.3.7).

- National Fire Protection Association (NFPA): NFPA standards are developed, reviewed and refined through a consensus process approved by the American National Standards Institute [143] and, while the standards are voluntary, they carry significant credibility across disciplines, including healthcare organizations. For example, many organizations, including the Veterans Health Administration (VHA), have adopted NFPA standards as mandatory. There are two NFPA standards that relate to emergency management programs for health systems:

Management Agency, Washington DC. Also used by California Emergency Management Agency in its Emergency Management/Responder Credentialing Program, accessed February 5, 2010 at http://www.calema.ca.gov/WebPage/oeswebsite.nsf/ac853b3f23b1cdac88257353004a071f/f6356e3ad99f6a6b882574c80066b498/$FILE/Field%20Cred%20Task%20Book%207-1-09.pdf

[143] NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity (2010). National Fire Protection Association; accessed February 5, 2010 at:: http://www.nfpa.org/assets/files//PDF/NFPA16002010.pdf

Textbox 1.1.3.7

Relevant Standards for Healthcare System Emergency Management

- NFPA 1600, 2007 and 2010 Editions (Standards for Emergency/Disaster Management and Business Continuity Programs)
- NFPA 99, 2005 Edition (Standard for Health Care Facilities)
- The Homeland Security Exercise and Evaluation Program (HSEEP)
- ASTM 1288-90, 2005 Edition (Standard Guide for Planning for and Response to a Multiple Casualty Incident)
- Emergency Management Accreditation Program (EMAP) (2007)
- ASTM E54.02.01 (Standard on Hospital Preparedness)
- The Joint Commission (TJC) Emergency Management Standards for Healthcare Organizations (2009)
- Comprehensive Emergency Management Program (CEMP) VHA Directive 0320.

NFPA 1600: NFPA 1600 *Standard on Disaster/Emergency Management and Business Continuity Programs* is a leading example of a framework for a comprehensive emergency management program.

The National Fire Protection Association (NFPA) publishes many standards that have application to EM programs. One of the most relevant to EM programs is NFPA 1600 which is freely available on the internet (see citation).

- Wide recognition: The NFPA 1600 standard has gained international acceptance by both the public and private sectors. This is exemplified by fact that it is contained in both the American National Standards Institute (ANSI)[144] and 9/11 Commission[145] recommendation as a national standard. Originally published in 1995 as NFPA 1600 Recommended Practice for Disaster Management, it has undergone multiple revisions. The 2000 edition introduced Business Continuity to the scope of the standard and subsequent editions (2004, 2007 and 2010) have updated the content and presentation of the standard.

- Comprehensive scope: The 2010 edition has reordered and expanded upon the 2007 edition. Within the 2010 edition “Chapter

[144] Information about NFPA and ANSI accessed February 5, 2010 at:: http://www.ansi.org/

[145] *The National Commission on Terrorist Attacks Upon the United States. 9/11 Report,* Chapter 12.4 Protect Against and Prepare For Terrorist Attacks (2004); accessed February 5, 2010 at: http://www.9-11commission.gov/report/911Report_Ch12.htm

4, Program Management, was expanded to emphasize the importance of leadership and commitment; includes new requirements for defining performance objectives; and includes new requirements for records management. Finance and administration was also moved to the program management chapter. The most noticeable change from the 2007 edition is the rewriting of Chapter 5 into four chapters addressing planning, implementation, testing and exercises, and program improvement. The ordering of these chapters follows a typical program development process and is consistent with "plan, do, check, act" or continuous improvement processes."[146]

- Variance from Comprehensive Emergency Management: Though superseding the 2007 edition, the 2010 edition retains the following major revision introduced in 2007: "expanding the conceptual framework of disaster/emergency management and business continuity programs. Previous editions focused on the four aspects of mitigation, preparedness, response and recovery. This edition identifies "prevention" as a distinct aspect of the program, in addition to the other four. Doing so brings the standard into alignment with other emergency management related disciplines and practices of risk management, security and loss prevention though EM typically maintains that "prevention" is a type of activity within the mitigation phase (see discussion below text box)."[147] The NFPA 1600 2007 edition listed a set of 16 program elements critical to a comprehensive program, emphasizing some concepts that have been under-appreciated by many practitioners in the past. These elements have been retained and expanded upon across five chapters in the 2010 edition (Textbox 1.1.3.8).

- Commonality of EM and business continuity: Importantly, NFPA 1600 demonstrates the commonality between **emergency management** and **business continuity**, prompting integration between these often disparate initiatives within organizations.

[146] NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity (2010). National Fire Protection Association, p. 2; accessed February 5, 2010 at: http://www.nfpa.org/assets/files//PDF/NFPA16002010.pdf
[147] NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity (2007). National Fire Protection Association, p. 2; accessed January 29, 2010 at:http://www.nfpa.org/assets/files/pdf/nfpa1600.pdf

Textbox 1.1.3.8

NFPA 1600 (2010 Edition) Disaster/Emergency Management and Business Continuity Chapters and Included Program Elements[148]

Chapter 4 Program Management
4.1 Leadership and Commitment
4.2 Program Coordinator
4.3 Program Committee
4.4 Program Administration
4.5 Laws and Authorities
4.6 Performance Objectives
4.7 Finance and Administration
4.8 Records Management
Chapter 5 Planning
5.1 Planning Process
5.2 Common Plan Requirements
5.3 Planning and Design
5.4 Risk Assessment
5.5 Business Impact Analysis
5.6 Prevention
5.7 Mitigation
Chapter 6 Implementation
6.1 Resource Management
6.2 Mutual Aid/Assistance 8
6.3 Communications and Warning
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Chapter 7 Testing and Exercises
7.1 Entity Evaluation
7.2 Exercise Evaluation
7.3 Methodology
7.4 Frequency
7.5 Exercise Design
Chapter 8 Program Improvement
8.1 Program Reviews
8.2 Corrective Action

[148] NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity (2010). National Fire Protection Association, pp. 6 – 10; accessed February 5, 2010 at: http://www.nfpa.org/assets/files//PDF/NFPA16002010.pdf

- NFPA 1600 and industry application of CEM: NFPA 1600 is, in effect, industry application of Comprehensive Emergency Management (CEM) principles. As such, the addition of "prevention" to the NFPA 2007 edition and retention in the 2010 edition, as an "aspect" of emergency management and the changed (2007 and again in the 2010 edition) definition of mitigation as primarily consequence management [see terminology text box] may be considered a homeland security industry application that highlights the importance of counterterrorism, national security intelligence, and other terrorist-prevention activities. It does not change the fundamental phases of CEM. Careful reading of CEM demonstrates that prevention is already an integral component of the mitigation phase.

Terminology alert!

Mitigation (from NFPA 1600 2004 Edition):[149] Activities taken to eliminate or reduce the probability of the event, or reduce its severity or consequences, either prior to or following a disaster/emergency.

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Mitigation (from NFPA 1600 2007 Edition):[150] Activities taken to reduce the severity or consequences of an emergency.

Prevention (from NFPA 1600 2007 Edition):[151] Activities to avoid an incident or to stop an emergency from occurring.

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Mitigation (from NFPA 1600 2010 Edition):[152] Activities taken to reduce the impacts from hazards.

Prevention (from NFPA 1600 2010 Edition):[153] Activities to avoid an incident or to stop an incident from occurring.

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149 NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity (2004). National Fire Protection Association, p. 4; accessed January 29, 2010 at: http://www.gensetcentral.com/nfpa1600.pdf

150 NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity (2007). National Fire Protection Association, p. 5; accessed January 29, 2010 at:: http://www.nfpa.org/assets/files/pdf/nfpa1600.pdf

151 Ibid. p. 5.

152 NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity (2010). National Fire Protection Association, p. 5; accessed February 5, 2010 at:: http://www.nfpa.org/assets/files//PDF/NFPA16002010.pdf

153 Ibid. p. 5.

- NFPA 99/12: NFPA Standard 99, Standard for Healthcare Facilities, 2005 Edition (Under revision in 2009 for a 2010 Edition) addresses safety issues: "The scope of this document is to establish criteria to minimize the hazards of fire, explosion, and electricity in healthcare facilities providing services to human beings."[154] Chapter 12, Emergency Management, is focused on identifying minimum criteria for a facility's Emergency Operations Plan (EOP). This has particular relevance to Emergency Occupant procedures for healthcare systems. The guidance in this text exceeds the NFPA 99/12 standards.

- The Homeland Security Exercise and Evaluation Program (HSEEP)[155]: The Homeland Security Exercise and Evaluation Program (HSEEP) is a capabilities and performance-based exercise program that provides a standardized methodology and terminology for exercise design, development, conduct, evaluation, and improvement planning. HSEEP constitutes a national standard for all exercises and is intended for use by the Federal government and all other entities utilizing Federal funding for their exercise programs. Through exercises, the National Exercise Program supports organizations to achieve objective assessments of their capabilities so that strengths and areas for improvement are identified, corrected, and shared as appropriate prior to a real incident. The HSEEP is maintained by the Federal Emergency Management Agency's National Preparedness Directorate.

  - The HSEEP Volumes, a series of program and reference manuals, integrate language and concepts from the National Response Framework (NRF), the National Incident Management System (NIMS), the National Preparedness Guidelines, the Universal Task List (UTL), the Target Capabilities List (TCL), existing exercise programs, and representative prevention and response protocols from all levels of government. The HSEEP policy and doctrine is organized into the following volumes:
    - HSEEP Volume I: HSEEP Overview and Exercise Program Management provides guidance for building and maintaining an effective exercise program and summarizes the planning and evaluation process described in further detail in Volumes II through V.
    - HSEEP Volume II: Exercise Planning and Conduct is intended

[154] NFPA 99 information accessed January 29, 2010 at: http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=99&cookie%5Ftest=1

[155] FEMA. HSEEP Web Site. HSEEP Overview; accessed January 29, 2010 at: https://hseep.dhs.gov/pages/1001_About.aspx

to help planners outline a standardized foundation, design, development, and conduct process adaptable to any type of exercise.

- HSEEP Volume III: Exercise Evaluation and Improvement Planning offers methodology for evaluating and documenting exercises and implementing an improvement plan.
- HSEEP Volume IV: Sample Exercise Documents and Formats provides sample exercise materials referenced in HSEEP Volumes I, II, III, and V.
- HSEEP Volume V: Prevention Exercises contains guidance consistent with the HSEEP model to assist jurisdictions in designing and evaluating exercises that test pre-incident capabilities such as intelligence analysis and information sharing.

- American Society of Testing and Materials (ASTM): ASTM's Committee E54 on Homeland Security Applications was formed to develop standards and guidance materials with a specific focus on borders, ports and transportation systems; to advance and harness science and technology; to prepare and respond to national emergencies; and to protect critical infrastructure. A Hospital Preparedness Standard (ASTM E54.02.01)[156] has been developed with input from Federal, State, and local entities and the private sector. Another ASTM standard (ASTM 1288-90: Standard Guide for Planning for and Response to a Multiple Casualty Incident[157]) is also applicable.

- Emergency Management Accreditation Program (EMAP): "The Emergency Management Accreditation Program (EMAP) is the voluntary national accreditation process for state, territorial, tribal, and local emergency management programs. Using collaboratively developed, recognized standards and independent assessment, EMAP provides a means for strategic improvement of emergency management programs, culminating in accreditation."[158] "Emergency management program means a jurisdiction's (state/territory, county, city) system for management and coordination of prevention, mitigation, preparedness, response and recovery activities for all hazards. In addition to the emergency management department or

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[156] ASTM standards, accessed February 15, 2010 at: http://www.astm.org/cgi-bin/SoftCart.exe/SNEWS/APRIL_2005/index.html?E+mystore

[157] ASTM 1288-90 accessed February 15, 2010 at: http://www1.va.gov/emshg/apps/kml/docs/astm1288.PDF

[158] Emergency Management Accreditation Program. *Emergency Management Standard, Foreword* (2007), page 1;. web site accessed March 6, 2010 at: http://www.emaponline.org/index.php?option=com_content&view=article&id=118&Itemid=110

agency, the program encompasses all organizations, agencies and individuals responsible for emergency management functions."[159]

The Emergency Management Standard set forth by EMAP is a scalable yet rigorous national standard. The standard was collaboratively developed in a series of working groups of emergency management stakeholders from government, business and other sectors, and continues to evolve to represent the best in emergency management for the public sector.[160]

EMAP is comprised of 15 program elements (Textbox 1.1.3.9) that are considered necessary components of a viable program. The EMAP elements are closely aligned with the NFPA 1600 program elements and cover all phases of Comprehensive Emergency Management: preparedness, mitigation, response and recovery.

Textbox 1.1.3.9

Emergency Management Accreditation Program (EMAP) Elements [161]

1. Administration and Finance
2. Laws and Authorities
3. Hazard Identification, Risk Assessment and Consequence Analysis
4. Hazard Mitigation
5. Prevention and Security
6. Planning
7. Incident Management
8. Resource Management and Logistics
9. Mutual Aid
10. Communications and Warning
11. Operations and Procedures
12. Facilities
13. Training
14. Exercises, Evaluations and Corrective Actions
15. Crisis Communications, Public Education and Information

[159] Ibid.
[160] Emergency Management Accreditation Program. *Emergency Management Standard, Foreword* (2007), page 1;. web site accessed March 6, 2010 at: http://www.emaponline.org/index.php?option=com_content&view=article&id=118&Itemid=110
[161] Emergency Management Accreditation Program. *Emergency Management Standard, Foreword* (2007), page2 4-14;. web site accessed March 6, 2010 at: http://www.emaponline.org/index.php?option=com_content&view=article&id=118&Itemid=110

TJC has published standards related to healthcare system preparedness. These are familiar to many healthcare systems. It should be noted that they continue to evolve.

- The Joint Commission: The Joint Commission (TJC) provides extensive standards for healthcare organizations seeking accreditation under its programs.[162] TJC previously addressed emergency management primarily within a set of standards referred to as the Environment of Care, with other relevant standards scattered across multiple accreditation areas. Major changes were made to these standards in January 2001, incorporating CEM, a Hazards Vulnerability Analysis (HVA), and the Incident Command System (ICS). Since the terrorist attacks in the fall of 2001, TJC emergency management standards have stressed healthcare facility coordination with its community partners, information management, and training and exercises. In the recent TJC standards revision, effective January 2009, emergency management became a stand-alone chapter with consolidation of relevant standards to one area of the accreditation manual. TJC terminology and concepts continue to evolve to become more in-line with Comprehensive Emergency Management.

  - TJC emergency management standards and a comprehensive emergency management program: TJC's use of "Emergency Management Plan" has now been supplanted by the more appropriate EM nomenclature "Emergency Operations Plan" (see textbox 1.1.3.10). TJC guidance now more clearly distinguishes the EOP and guidance for emergency response from preparedness planning and guidance for preparedness activities TJC standards can essentially can be met through the EM program and a comprehensive EOP as described later in this Unit.

Textbox 1.1.3.10

EM Program versus Plan

The Joint Commission organizes its Chapter on EM standards by presenting EM program requirements (emergency management committee, hazard vulnerability analysis, community interface and others), then presenting standards for response and recovery, and finally focusing upon evaluation activities (inventory process, exercises, and performance assessments after exercises and actual incidents).

In addition to general and specific requirements for the EOP, TJC emphasizes six functional areas considered mission critical for healthcare organizations. These were identified through analysis of recent incidents, including Hurricane Katrina, and address:

[162] Information about The Joint Commission and its programs accessed February 15, 2010 at: http://www.jointcommission.org/AccreditationPrograms/

1. Emergency communications
2. Resources and assets management
3. Safety and Security
4. Staffing Responsibilities for Medical Surge and Extended Incidents
5. Utilities (Electricity, Water, Fuel, and other essential needs)
6. Clinical and support activities.

The Joint Commission emergency management standards that relate to ***emergency management program activities*** include:

▪ Involving the hospital's leaders, including those of the medical staff, in preparedness planning.

▪ Defining and integrating the hospital's role in relation to the communitywide emergency management program.

▪ Conducting a hazard vulnerability analysis to identify potential emergencies that could affect the need for the hospital's services or its ability to provide those services.

▪ Establishing, in coordination with community emergency management planning (where available), priorities among the potential emergencies identified in the hazard vulnerability analysis.

▪ Identifying specific procedures that describe mitigation, preparedness, response and recovery strategies, actions and responsibilities. These procedures would be attachments to the organization's Emergency Operations Plan.

▪ Pre-incident planning that is accomplished cooperatively among healthcare organizations that together provide services to a contiguous geographic area (for example, among organizations serving a town or borough). This facilitates timely sharing of information and coordinated response and recovery plans.

▪ Identified deficiencies and opportunities for improvement identified in After-Action activities are communicated to those responsible for the implementing the improvements.

TJC standards can be considered in relation to the 5 functions outlined in ICS.

○ <u>TJC standards related to ICS</u>: The TJC emergency management standards address incident command for healthcare organizations, and require that the ICS structure is consistent with the community's command structure. The standards' requirements are organized according to the functions of the Incident Command System. This illustrates how an enterprise might structure its Emergency Operations Plan to be useful for both accreditation surveys and for actual response guidance.

- Command: The command section is responsible for overall management of the incident. The Joint Commission emergency management standards for this functional area include an "all-hazards" Incident Command Structure (ICS) in the hospital that links with the community's ICS structure and that addresses the following:
    - Initiating the response and recovery phases of the plan, including how, when, and by whom the phases are to be activated.
    - Identifying and assigning staff to cover all essential staff functions under emergency conditions and the organization's reporting structure within the incident command system.
    - Exchanging information with other local healthcare organizations.
    - Re-establishing usual operations after an emergency.
- Communications capabilities:
    - Notifying staff when emergency response measures are initiated, and ongoing communications of information and direction as the response evolves.
    - Notifying external authorities of emergencies, including possible community emergencies identified by the hospital; (for example, evidence of a possible bioterrorist attack).
    - Communicating with patients and their families during the emergency.
    - Managing communication with the community through the news media.
- Operations: The operations section responsibilities include all activities that are directed toward reducing the immediate hazard, establishing situation control, and restoring normal

operations. TJC emergency management standards for this functional area include:

- Activities related to care, treatment or services. Examples include scheduling, modifying, or discontinuing services, maintaining patient information, arranging referrals, and transporting patients.

- An influx of casualties of a number sufficient to stress the capabilities of the hospital.

- Evacuation of the entire facility (both horizontally and, when applicable, vertically) when the environment cannot support adequate patient care and treatment.

- Establishment of alternative care site(s) that can meet the needs of patients when the environment cannot support adequate care, treatment, or services.

- Transportation of patients and their equipment, medications, and medical information to alternate care sites.

- Security (examples include perimeter management, crowd management, and traffic control).

- Planning: The planning section responsibilities include the collection, evaluation and dissemination of tactical information about the incident. Joint Commission emergency management standards for this functional area include:

  - Cooperative planning throughout an incident among healthcare organizations that together provide services to a contiguous geographic area (for example, among organizations serving a town or borough). As with pre-event planning, this facilitates the timely sharing of information about:

    - Confirm essential elements of their command structures and control centers (from preparedness planning) for that specific emergency response.

    - Names, roles, and telephone numbers of individuals in their command structures for the specific response.

    - Resources and assets that are available and could be potentially shared in the evolving emergency.

- Names of patients and deceased individuals brought to their hospitals to facilitate identifying and locating victims of the emergency.
- Ability to track patients to and from any alternative care site.

- Logistics: The logistics section responsibilities include providing all support needs to the incident (facilities, transportation, supplies, equipment maintenance and fueling, feeding, and communications). TJC emergency management standards for this functional area include:

  - Maintaining backup internal and external communication systems in the event of a primary communication system failure during emergencies. See "communications" above for the range of capabilities required.
  - Managing the following under emergency conditions:
    - Staff support activities (Examples include housing, transportation, and incident stress debriefing).
    - Staff family support activities.
    - Critical supplies (Examples include pharmaceuticals, supplies, food, linen, and water).
  - Establishing procedures, as applicable, for:
    - Replenishing supplies and equipment throughout response and recovery.
    - Transporting patients, staff, and equipment to the alternative care site.
    - Transferring necessities of patients (for example, medications and medical records) to and from the alternative care site.
    - Identifying licensed independent practitioners and other care providers and needed personnel during emergencies.
    - Providing alternative means for meeting essential

building utility requirements (for example, electricity, water, ventilation, fuel sources, and medical gas/vacuum systems).

  - Mobilizing facilities for decontaminating and/or isolating patients with radioactive, chemical, or biological contamination.

  - Supporting the potential sharing of resources with other community healthcare organizations.

- Finance/Administration: The finance/administration section responsibilities include accounting for all incident-related personnel time and attendance, procurement, compensation/claims, and costs incurred.

  - There are no Joint Commission emergency management standards that relate to this functional area.

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Module 1.2

The Emergency Management Program for Healthcare Systems

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Lesson 1.2.1 Overview: The Emergency Management Program

Lesson Objectives

- *Define the difference between a program and a plan.*
- *List important concepts that contribute to the definition of adequate "readiness".*
- *Define the term "systems approach" and the systems based methodology that can be used in an effective emergency management (EM) program.*
- *List representative standardized processes and common templates that promote consistency and coordination across the EM program.*
- *List the components of an EM program development process and relate them to the four phases of Comprehensive Emergency Management (CEM).*
- *List the core elements and key activities of the EM program.*

Introduction: The Need for a Single "Entity" to Manage the Coordination of All Components of Comprehensive Emergency Management

As described in the previous module, Comprehensive Emergency Management (CEM) is an overarching set of principles and core concepts. It must be "operationalized" (and hence made useful for the organization) within a structure and process that addresses the four CEM phases: mitigation, preparedness, response, and recovery. This, in essence, is the core mission of the Emergency Management Program (EMP).

The many tasks and inter-related efforts of CEM create a complex range of activities that require careful coordination. A single entity within an organization is usually assigned to provide oversight and high-level management. This single entity should also provide close coordination with related initiatives within the organization, with "neighborhood" partners, and with community emergency response organizations. These include the local government jurisdiction's Emergency Management Agency, Public Health Departments, Emergency Medical Services, law enforcement, fire services and others.

The "emergency management system" described in this lesson is accomplished by establishing and maintaining an **emergency management (EM) program** that encompasses and organizes all EM activities for the healthcare system. "EM program" incorporates the word "program" (see terminology textbox) rather than "plan" to emphasize that emergency management includes many wide-ranging, ongoing activities that address all four phases of CEM, whereas a plan is more commonly guidance for a series of actions that occur only in response to defined circumstances.

Terminology alert!

Program (management definition): An organized collection of projects, activities and/or individual plans in an established framework that directs them toward a common goal. The term "program" implies that regular, ongoing activities are occurring. This contrasts with the term "plan," which may be a set of guidelines that are inactive until "activated."

Emergency Management as a Program

The **Emergency Management (EM) Program** (see terminology textbox) provides the platform for managing and coordinating the many activities that must be addressed. A comprehensive EM program is extraordinarily complex for any organization, and perhaps even more so when accomplished within a healthcare system.[163] As the EM profession evolved, standard methods and program strategies have been validated as effective, and an increasingly consistent body of knowledge has emerged from research and practice (some of which has been reviewed in Module 1.1). EM Program concepts, strategy, tactical methods and examples are presented in this module and throughout the text, and explained in the context of Emergency Management for Healthcare Systems.

[163] Few other disciplines are as constrained as medicine, in terms of financial limitations, regulatory requirements, and complexity of operations.

Terminology alert!

Emergency Management (EM) Program: A program that implements and sustains the mission, vision, and strategic emergency management goals and objectives of the organization. It provides the management framework for the EM program and defines EM's role within the larger organization. The EM program promotes a balanced comprehensive approach that incorporates mitigation, preparedness, response and recovery into a fully integrated set of activities. The "program" applies to all departments and functional units within the organization that have roles in responding to a potential or actual emergency. *(Adapted from NFPA 1600 [2007 and 2010], and the VHA Guidebook, [2004])*

While the EM program provides the vehicle for conducting effective emergency management activities within a larger organization, the program's inherent complexity must be acknowledged and addressed during its development, implementation, and sustainment. Emergency management is an inter-disciplinary, trans-organizational, inter-agency and inter-governmental function. The EM program, therefore, must address multiple important *management* issues that are inherent to emergency management:

- Managing coordination and integration: A primary task of emergency management is the coordination and integration of various disciplines and agencies that are not always accustomed to collaborating on a day-to-day basis. Effective "coordination" requires careful attention to the management structure and processes used to effect this coordination and integration.

- Bridging multiple boundaries: Emergency management in the United States exists at the Federal (national), State and local (counties and cities) levels, as well as within each response entity at the organizational level. To manage large and/or complex incidents, structure and methods must be established to effectively bridge the multiple levels and jurisdictional boundaries, and the public-private interface.

- Addressing organizational disparity within healthcare systems: Even within a single organization, components may not easily interface for the purpose of emergency response. In emergency management for healthcare systems, for example, these disparate components

The four phases of EM are organized according to time and functional characteristics, so that they can be effectively managed.

Preparedness activities consume much of an EM program's time. Critical activities during preparedness include the development, implementation, maintenance, and revision of an EOP.

include:

- The multiple departments (or key operating units) within a hospital.
- Multiple facilities within a single healthcare organization.
- Multiple very different response agencies within a jurisdiction that must coordinate closely with the hospital response (public health, emergency medical services, nursing homes, medical clinics, pharmacies, independent t laboratories and others).

- Addressing the phases of CEM: The EM program has responsibility for all healthcare system activities across the four phases of CEM: mitigation, preparedness, response and recovery. The "phases" of CEM were established to generally group EM activities according to **time and functional** characteristics. More importantly, however, the phases group activities according to methods of management. As explained later, management of mitigation and preparedness is significantly different than the management of response and recovery. Each phase of CEM is briefly defined in Lesson 1.1.3. The activities grouped under these phases are summarized here, with more in depth explanation provided later in this unit.
  - Mitigation activities: These are actions to either prevent or decrease the likelihood of selected hazards occurring or minimize or eliminate the hazard consequences should the impact occur. It is the cornerstone of emergency management for healthcare systems because any response strategy relies on healthcare system resiliency (i.e., surviving a hazard and maintaining safe and effective operations in the post-impact environment). An effective mitigation effort should begin with, and be based upon, a valid hazard vulnerability analysis (HVA).[164] This will inform decisions as an organization prioritizes issues during mitigation and preparedness planning. Mitigation activities may focus upon structural issues, such as facility improvements, or on non-structural issues, such as monitoring procedures and improved securing of potential hazardous materials. See Module 1.4 for more details.
  - Preparedness activities: These activities all relate to building and sustaining response and recovery resiliency, capacities and capabilities.[165] The activities are intended to help save lives and minimize damage by preparing systems and their personnel to respond appropriately when an emergency is imminent or occurs.

[164] The HVA is addressed in detail in Module 1.3.
[165] See Lesson 1.1.1 for an extensive discussion of these terms.

Preparedness activities establish, implement, exercise, refine, and maintain systems used for response. The most critical task in preparedness planning is to define the system description (i.e., how resources are organized) and the concept of operations (i.e., actions and interactions that should occur) during emergency response and recovery. The documentation will guide future response as well as the rest of the preparedness activities. A critical output of EMP activities, therefore, is the emergency operations plan (EOP) for use in response to and early recovery from all emergencies and disasters. Preparedness activities also include:

- Establishing and conducting instructional activities such as education and training.
- Acquiring and maintaining resources.
- Conducting exercises and other evaluation activity.
- Improving the plans and elements of the response system.

Preparedness is discussed in greater detail in Module 1.5.

- Response activities: These encompass all actions that directly address the hazard impact. They include actions taken in anticipation of an impending threat (e.g., hurricane, tornado) and actions during and shortly after hazard impact. Specific guidance for incident response, including processes for asset deployment, is addressed in the Emergency Operations Plan (EOP) developed during preparedness. An effective EOP uses ICS as its management system and not only guides the initial or reactive response actions but also promotes transition to subsequent proactive incident management ("management by objectives"). This is discussed in great detail in Lesson 1.1.2 and Unit 3.

- Recovery activities: These actions restore the organization, and to some extent the community, to "normal" or a "new normal"[166] after a major incident. The initial recovery stage (which actually begins in the late stages of response) is fully integrated into response mechanisms, and the EOP incident management process may be extended well into any complex recovery. For a healthcare system, recovery includes:
  - The "return to readiness" of the emergency response resources of the organization.
  - Resolution of important backlogs in pending medical cases

[166] In some cases, the need for new buildings, geographic re-location, new methods for conducting business, new security arrangements and other indicated recovery actions create such a change from the "pre-incident state" that it is referred to as "the new normal."

such as deferred surgical procedures.
- Action to address personnel impact from the incident.
- Restoration of property loss or damage.
- Restoration of normal healthcare delivery, with widely publicized information of this to the organization's usual medical population.

The management transition from response to recovery (both timing and methods) must be carefully planned and implemented to avoid problems. As recovery progresses, ICS eventually transitions to regular agency management personnel and processes or some intermediate unit and management as defined by the responsible organizations.

The EMP's true value for the organization for all of the above will be realized if it maintains an "all-hazards" approach, with strategies that recognize and address the commonalities of incident identification, assessment, and response and recovery across the range of natural, technological, and intentional hazards.

Strategies for conducting the EM Program

One of the goals of any emergency management program is the creation of a response system that is organized by functions.

The complexities of establishing and conducting a healthcare emergency management program may be reduced using overarching management strategies.

- The emergency management "system" orientation: A desired end-state for preparedness is the creation of an emergency response **system** (see terminology textbox) that is organized by functions. The EM Program must therefore be well organized and focused upon the defined priorities. In most healthcare systems, the entity that oversees this system is the EM committee, with the lead individual acting as the system emergency program manager.

Terminology alert!

System: A clearly defined functional structure, with defined processes, that coordinates disparate parts to accomplish a common goal. [167]

[167] Barbera, J.A., Macintyre A.G. *Medical and Health Incident Management (MaHIM) System: a comprehensive functional system description for mass casualty medical and health incident managemen*t (2002). Available at: www.gwu.edu/~icdrm.

- Use of a "systems based" approach: A primary challenge confronting Emergency Management in developing this integrated system is trying to coordinate and interface the disparate stakeholders who are not always accustomed to collaborating on a day-to-day basis. Emergency Management, however, must be the focused activity that acts as the hub to coordinate all of these entities, so that they can work collaboratively toward the common EM goal of safe, resilient, and effective emergency response and recovery. "System-based methodology" provides the unified approach, demonstrating an overarching strategy and an inter-relationship between components to achieve the common goals. This "systems approach" (see terminology textbox) is applied to the day-to-day activities related to development, maintenance, evaluation and improvement of the emergency management program, as well as during emergency response.

Terminology alert!

Systems approach**:** A management strategy that recognizes that disparate elements must be viewed as inter-related components of a single system, and so employs specific methods to achieve and maintain an overarching integration of these elements. Systems approach methods include the use of standardized structure and processes and foundational knowledge and concepts in the conduct of all related activities. This approach may also be called "systems-based methods."

- Full implementation of the emergency response organization: To reach a threshold where an organization judges itself adequately prepared, the response system for the organization must be adequately developed and implemented (e.g., established, trained and exercised). The response system should include detailed process descriptions for internal management and for external coordination with the community response. As noted earlier, the described response system is documented in the Emergency Operations Plan for the organization. The implementation and sustainment of this response system becomes an overarching goal for the EMP rather than simply by moving forward with "targets of opportunity" such as available external training (which may provide little organizational benefit), resources acquisition from government grants, and the other less directed preparedness strategies currently in use.

- Adherence to Comprehensive Emergency Management Principles &

Practice Concepts: It is important for the medical and health professionals to recognize and embrace these principles and foundational concepts as they research, develop, and practice healthcare emergency management. Experience over the past decade has demonstrated that it is no longer sufficient for healthcare professionals to assume that they can adequately develop and manage emergency management programs based upon traditional knowledge accumulated during regular medical educational experience. For example, the management of a very busy emergency department does not equate in any fashion to "incident management" performed using ICS concepts under extraordinary conditions. Creative ideas and innovations cannot alone serve to adequately address the healthcare organization's mitigation, preparedness, response, and recovery. A professional, validated emergency management system is essential.

A systems approach to the emergency management program emphasizes:

1) Core concepts and principles found within the discipline.

2) Standardized processes and templates for consistency

3) Common managerial strategies and practices with defined roles for participants.

- Systems based approach applied to Healthcare Emergency Management: A systems based approach to Emergency Management includes the following three critical concepts:

#1 Recognition and application of foundational concepts and principles accepted within the discipline: These are presented in Module 1.1.

#2 An organized healthcare emergency management program with common managerial strategies and practices: To establish and conduct effective emergency management, all related activities should be conducted within a single healthcare Emergency Management (EM) Program supported by the highest level authorities within the larger administrative hierarchy. In most healthcare systems, this entity is the EM committee, with the lead individual acting as the system's emergency program manager or, more appropriately, healthcare emergency manager. The program establishes common managerial strategies so that all participants have a defined role that is coordinated within the EM program.

Standardized processes can be used throughout the 4 phases of emergency management (mitigation, preparedness, response, and recovery).

#3 Use of standardized process and common templates to "operationalize" EM strategies: Standardized process involves well-described, reproducible, and usually sequential steps to accomplish a stated objective. Due to its importance, more detail is provided for this third concept.

Common templates are tools that promote consistency and completeness in conducting actions across the emergency management spectrum. Each can be used for conducting most emergency management-related activities. Examples from preparedness and response phases are provided below for illustration:

- Preparedness: Standardized development process that can be used during emergency management committee work to develop:

  - A prioritized list of hazards that threaten a healthcare organization, as an output of the Hazard Vulnerability Analysis process.

  - The overarching "emergency operations plan" (EOP) that guides response and recovery, using a standardized EOP format and consistent incident command system structure and procedures.

  - A procedural tool, such as a notification procedure, with standardized terminology and principles that tie the notification into EOP mobilization and response actions.

  - A fixed resource, such as a decontamination facility, with a standardized layout, common principles for receiving and processing patients, and so on, so that operational level training can be developed and appropriate equipment cached for immediate use.

  - An After Action Report (AAR), as the end product of a standardized AAR process that follows an exercise or actual incident.

- Incident response: Standardized processes and templates from the Incident Command System can similarly be adapted for:

  - Developing incident action plans.

  - Conducting operational briefings.

  - Using situation reports.

  - Many other management functions during emergency response and recovery operations.

The use of template processes can facilitate a uniform approach to various components of the EM program.

In designing capacity and capabilities, **this standardized approach promotes consistency and coordination across all components of the total "system", with their individual objectives supporting the overall organizational mission.** This systems based methodology for emergency management is analogous to "the scientific method"[168] used ubiquitously in modern medicine to provide a neutral, objective and common process for conducting medical research.

- VHA example templates: The *VHA Emergency Management Program Guidebook*[169] is an illustration of an organization's collection of tools to assist a healthcare system prepare in an efficient and *consistent* manner. The overarching VHA template for developing and maintaining an effective EM program is presented in Textbox 1.2.1.1 as an example.

Textbox 1.2.1.1

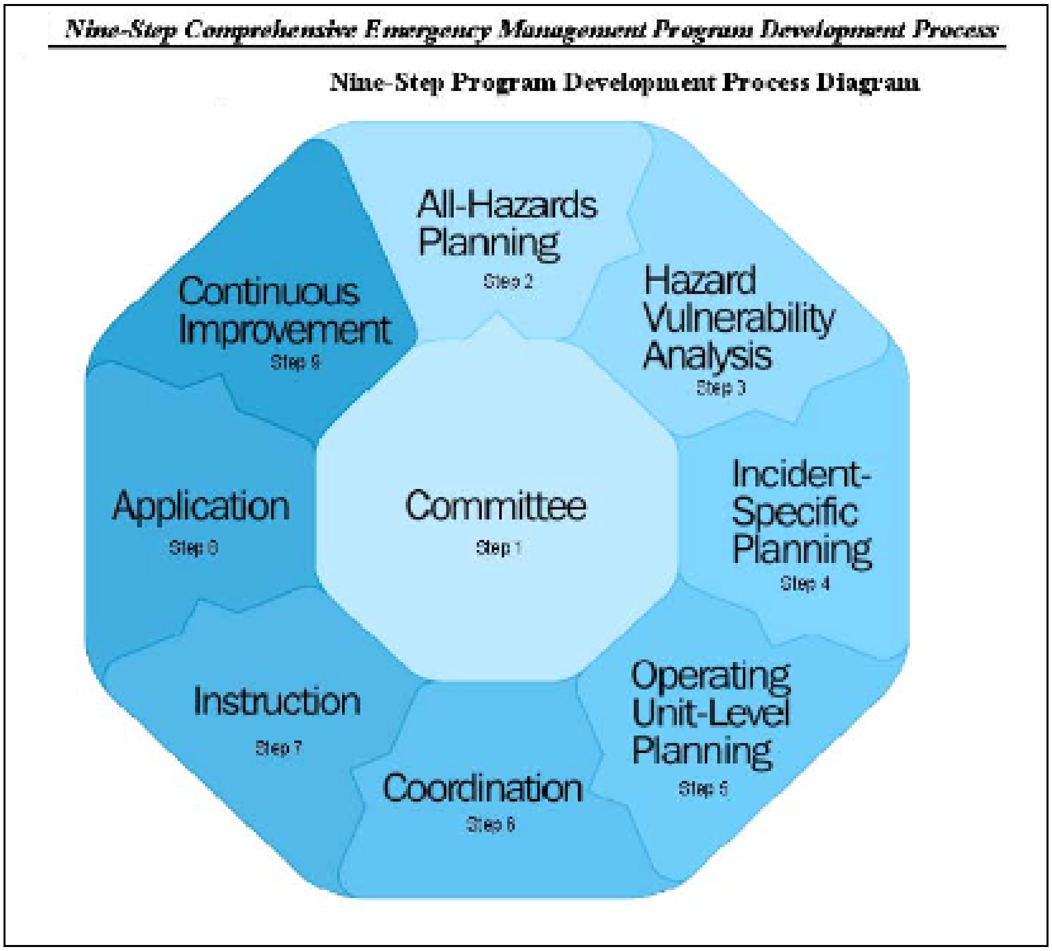
The VHA Nine-step Emergency Management Program

The model below illustrates an adaptation of the original Integrated Emergency Management System (IEMS)[170] for a program development process. In the guidance that accompanies the model, each of the nine steps is keyed to relevant TJC, NFPA and FCD 1 and 2 requirements.

[168] Scientific methods and the follow-on *scientific methods* are described in many historical and contemporary resources. An accurate summary is available at: http://www.scientificmethod.com/smvsm.html, accessed January 31, 2010.

[169] U.S. Department of Veterans Affairs. *Emergency Management Program Guidebook.* 2005, Washington, DC; accessed January 31, 2010 at:: http://www1.va.gov/EMSHG/

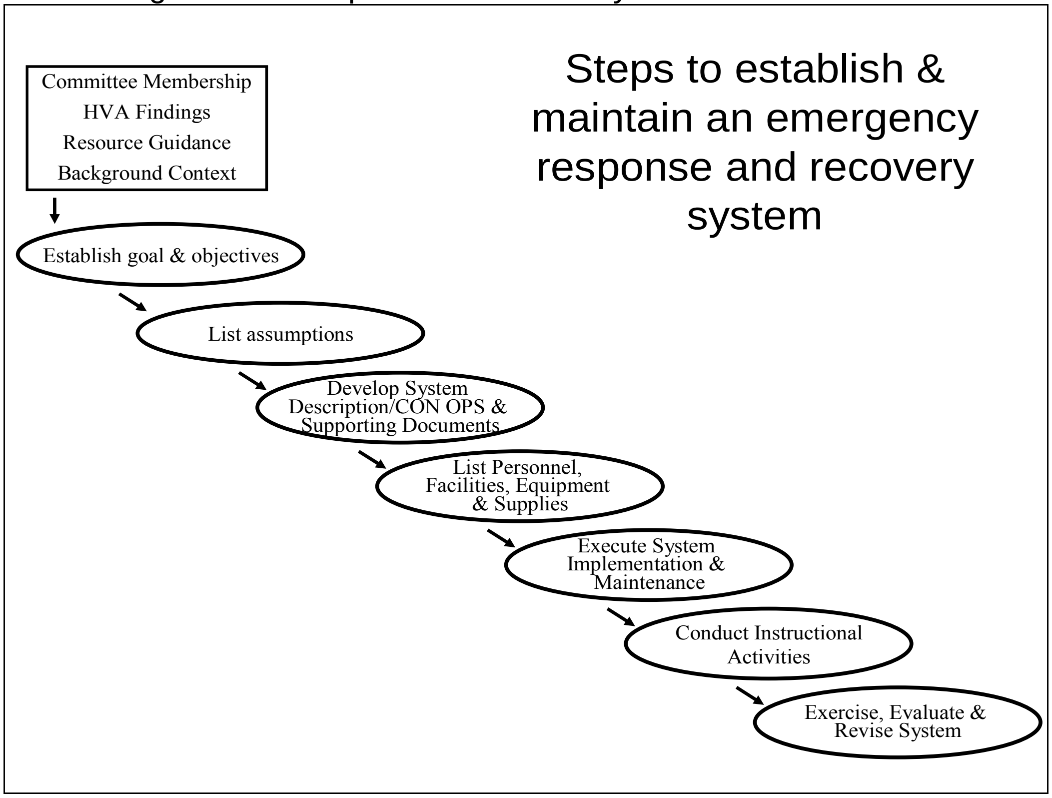
[170] FEMA. *The Integrated Emergency Management System: Process Overview* (1983), pp. CPG 1-100. Federal Emergency Management Agency, Washington DC.



- Other templates in this text: Many other template approaches are presented for considerations throughout this text. In particular, the authors have successfully used the stepwise development template, summarized in Exhibit 1.2.1.1, during their experience in developing a wide range of components within emergency response systems. The development template may be used for establishing particular operational elements of an EM program, such as decontamination facilities, pharmaceutical cache, patient reception process, etc.

An example of a template systems approach in developing a decontamination capability is presented.

Exhibit 1.2.1.1: Systems-based methodology for developing and maintaining effective response and recovery.



- <u>Using the System Development Template</u>: Application of the above noted systems development template to the creation of a specific decontamination resource within the EM program is presented as an example:
  - <u>Establish objectives</u>: For a healthcare system patient reception and decontamination capability, suggested objectives might be:
    - Provide for the protection and security of the facility, facility personnel, and patients already being cared for at the time of a hazardous materials (HAZMAT) incident.
    - Provide adequate and efficient care for patients presenting with real or the potential for real contamination.
    - Provide for the consideration of regulatory requirements (as appropriate).
  - <u>List assumptions</u>: For a decontamination capability, assumptions are listed. To develop accurate assumptions, a thorough understanding is required of the system environment when managing emergency, no-notice, contaminated patients. The

assumptions then summarize important aspects of the environment, the organization, and the response needs. This may include, for example, how rapidly the resource must become available based upon the proximity to potential hazmat release, how many patients per unit time the resource should process, and other semi-quantitative parameters.

- Develop the system description and concept of operations: The necessary functions are delineated for the capability of receiving and decontaminating patients. The decontamination function should be ICS consistent in structure, position designations, and interface with the larger organization's Incident Management Team. ICS terminology should be used. For example, a decontamination task force could be utilized by the healthcare system to address this activity. Specific positions (task force leader, safety officer, personnel assigned to assist patients, personnel assigned to secure decontamination areas, etc.) should be established with position pre-qualifications for personnel who will staff the positions. The reporting structure to the overall organization should be described as well. In addition, specific procedures and processes should be outlined. Key activities, including mobilizing the decontamination facility, donning and doffing of PPE, and care of an injured employee should be outlined.

- List indicated personnel positions, facilities, equipment, and supplies: Personnel positions required for managing and maintaining the program should be selected to fulfill the structure outlined as above. The position qualifications and, ideally competencies, should be developed along with appropriate operational checklists to guide activation, mobilization, response and recovery. Equipment and supplies should be investigated, acquired, and stored in a manner conducive to their emergency use. Other important resource considerations are provided in Module 1.5.

- Execute system implementation and maintenance: Acquire, construct, store resources necessary for the patient reception and decontamination process to be conducted. This also includes following maintenance schedules for equipment servicing and/or replacement.

- Develop and conduct education and training: Specific education and training are delivered. In addition, drills are utilized to practice a series of skills such as procedures for washing off a patient or for donning and doffing PPE. Refresher mechanisms and schedules are established for personnel.

- Exercise, evaluate, and revise system: Evaluation and revision of the patient reception and decontamination capability occurs after exercises or after response to an actual incident. Accepted changes are incorporated into EOP documentation and EM program guidance documents. Appropriate personnel are informed of the changes.

Organizations often have a difficult time defining the end point for "adequate preparedness." A better end point might be defining and implementing an appropriate emergency response system.

Defining "Prepared" Through an Effective Response Model

The majority of day-to-day activities within an emergency management system focus upon "preparedness." A recurring issue in emergency management, however, is defining "adequate preparedness" or "readiness" for likely emergencies or disasters. In other words, a critical question is whether the organization has reached a threshold of *adequate* preparedness. This may be difficult to ascertain. Much of "readiness" has focused upon adequate numbers and types of resources, but it is even more critical to have well-defined, established methods for managing and directing those resources during the emergency situation. The readiness question may therefore be better addressed by restating the issue as ***"what is the system the organization is ready to activate to adequately respond to 'likely hazards'?"***[171] Adequacy of this response model may then be evaluated through study and exercises. With this approach, a more objective assessment of readiness may be conducted. Readiness is therefore evaluated in large part by assessing the management elements developed for response and recovery. The following concepts provide further criteria for evaluating essential components of and critical activities for an effective emergency management program.

A successful emergency management program has certain characteristics.

Essential Elements and Critical Activities of a Successful Emergency Management Programs

- Clear EM program mission/goals**:** The mission can best be described as the endpoint the organization would like to achieve. It is an aggregate of goals set for the organization (see terminology textbox). For the EM Program, the goals should be clearly stated and documented. For example, one goal may be "establishing a comprehensive emergency management program that is focused on maintaining continuity of patient care operations and meeting the medical needs of the community." By describing this in clear terms,

[171] "Likely hazards" can be identified through a well executed Hazard Vulnerability Analysis as described in Module 1.3.

the purpose of the EM program is understandable and subsequent steps for the program can be focused by this purpose.

Terminology alert!

Goals, Organizational: A description of the end state – where the organization wants to be, at the end of the activity, program, or other entity for which the goal was defined. The goals taken together can be equated to the organizational mission. Goals can be set for any component of a program (e.g., goals for overall EM program, or goals for a specific preparedness activity).

EM program objectives: An effective EM program for healthcare systems must also have clear objectives that are designed to achieve the stated goals (see terminology textbox for relationship between goal, objectives and strategy).

Terminology alert!

The relationship between *goal*, *objective,* and *strategy*

Goal: A description of the end state – where the organization wants to be at the end of the activity, program, or other entity for which the goal was defined.

Objectives: The interim steps to achieving the goal.

Strategy: The approach to how a goal and objectives are to be achieved.

The objectives are then applied across the EM program, guiding the development of tasks for the annual mitigation and preparedness work plans. Example EM program objectives might include the following:

- Provide leadership and direction across all phases of emergency management.
- Identify hazards and take actions to minimize or eliminate their occurrence and/or their consequences.
- Define and prepare for the continuity requirements, protective

actions, and service needs created by the hazard impact on the community and on the healthcare organization itself.

- ○ Define individual, team and organizational responsibilities during emergency response and recovery operations, and the competencies to meet these responsibilities.
- ○ Identify required resources needed for emergency response and recovery, and develop methods for acquiring and maintaining them in a state of readiness.
- ○ Conduct effective organizational information management and effective decision-making during emergency response and recovery as well as during day-to-day mitigation and preparedness activities.
- ○ Provide emergency response and recovery management and coordination within the healthcare facility and/or the healthcare system, as well as integration with the broader response community.

The success of an EM program often hinges upon the appropriate construct of, participation in, and maintenance of an Advisory EM committee (EMC).

- Established Advisory Emergency Management Committee (EMC): An established EMC is a critical component of a successful EM program. The committee is charged with steering the EM program, through the establishment of measurable objectives as presented above, as it evolves through its development, implementation, use, maintenance, evaluations, and revisions. Successful EMCs encourage multidisciplinary and departmental participation. A strategic, proactive approach to the activities of the committee, based upon careful planning, provides better results than reactive activities that merely create products in reaction to events or for accountability purposes. Recognizing the established relationship of the EMC to the organization's regular day-to-day structure can provide benefit.

The Emergency Program Manager holds responsibility for the program, but must be empowered to do so and must have a defined relationship with the organization's day-to-day administration.

- Strong, professional emergency program manager: The selection of and support for a qualified emergency program manager to lead the efforts of the EMC can provide the appropriate overall guidance and management of the collective EM program efforts. The position of the emergency program manager (see terminology textbox) should be well delineated within the organization's administrative structure. The EMC and the emergency program manager (EPM) are addressed in more detail in Lesson 1.2.2.

Terminology alert!

Emergency Program Manager (EPM): The individual primarily responsible for developing, implementing and maintaining a healthcare organization's emergency management program.

- Leadership and direction: Specific leadership and direction strategies can be employed by the emergency program manager and committee to enhance the ability of the EM program to integrate with and support the overall organization. As an example, the above described mission or goals of the EM program must be established within the context of the overall organizational mission. This requires research and delineation of what it is the organization is attempting to achieve in its everyday activity. Building organizational support for the EM program is often necessary to counter inertia. This organizational support from all levels is vital as the EM program must be continuously considered, practiced, and managed to develop and maintain the necessary structure and levels of competence throughout the organization. Managerial strategies are further discussed in Lesson 1.2.2.

- Strategic administrative planning and effective annual work-plans: The EM program will only succeed if it is approached in a professional manner. The **Strategic Administrative Plan** is the framework for operation of the EM program and what the organization hopes to accomplish during a designated multi-year period of time. An annual work plan that describes planned activities for that year facilitates understanding by the EMC and administration of the shorter term steps in the development and refinement of the EM program.

  This type of planning proactively organizes a series of activities and assigns responsibilities for action and follow-up. Within a specific interval (typically annually), work plans may be established in accordance with the mission, goals, objectives, and budget established by the EMC and captured in the strategic administrative plan. Work plans delineate the tasks to be accomplished that will achieve the objectives of this larger strategic administrative plan. At the conclusion of the defined time period, a Program Review is conducted to evaluate success in achieving stated objectives. This review may be a primary driver for revision and improvement of the strategic administrative plan. This can be accomplished through various means but often involves document reviews, interviews and/or observations of important EM program components. The program review would reveal areas where the EM program could be improved as well as report on the progress towards achieving the goals and objectives set for that time interval.

The strategic administrative plan should be informed by NFPA 1600 (2010 edition) guidance (see Textbox 1.2.1.2), and the following elements included:

- The overall emergency management mission and vision of the organization and a description of its role in community-wide emergencies.
- Organizational goals and objectives that will guide overall program management efforts.
- The scope of the emergency management program should be delineated.
- The timeframe for annual work plans and other regularly recurring, important programmatic activities.
- Assignment of responsibilities to individual committee positions and sub-committees.
- Budgetary and related administrative details.

Textbox 1.2.1.2

NFPA 1600[172]
Program Administration

The entity shall have a documented program that includes the following:

a. Executive policy including vision, mission statement, roles and responsibilities, and enabling authority.
b. Program scope, goals, objectives, and method of program evaluation.
c. Program plan and procedures that include the following:
   (1) Anticipated cost
   (2) Priority
   (3) Time schedule
   (4) Resources required.
d. Applicable authorities, legislation, regulations, and industry codes of practice as required by Section 4.5.
e. Program budget and schedule, including milestones.
f. Records management practices as required by Section 4.8.

[172] NFPA 1600 Standard on Disaster/Emergency Management and Business (2010). National Fire Protection Association, accessed February 5, 2010 at: http://www.nfpa.org/assets/files//PDF/NFPA16002010.pdf

A sample format for a Strategic Administrative Plan is provided in Textbox 1.2.1.3.

Textbox 1.2.1.3

Strategic Administrative Plan: Sample Outline

I. Introduction
- Organizational mission, vision, and overall objectives
- Description of the purpose of the organization's emergency management program
- Identification of the priority hazards, threats and planned events that threaten the organization
- Explanation of any assumptions bearing on organizational performance during emergencies
- List of overall emergency management goals
- General description of the process the organization will use to accomplish these goals and objectives, including committees and sub-committees, steps, timeframes, and budget.

II. Program management goals and objectives
- Statement of overall emergency management goals and supporting objectives
- Explanation of the metrics that will be used to monitor progress.

III. Program management process
- Explanation of the major steps or sequences for program development, maintenance and evaluation
- Identification of personnel involved in the EM committee and their roles and responsibilities
- Description of the EM committee decision-making process for selecting priority projects and establishing mitigation and preparedness work plans and project level objectives.

IV. Work plans and project level implementation activities. For each work plan, include a:
- Description of the major project, the problems they address, performance objective(s) and the current status of the projects
- Listing of strategies for accomplishing the work plan objective(s), including who is responsible, time and budgetary issues.

V. Appendices
- Overall program timelines
- Project level work plans where indicated.

Tools are then used to capture the planned activities and the timelines. These activities are discussed in the next section. Example tools (from VHA) for establishing planned activities and their timelines within the EM program are provided in Exhibit 1.2.1.2.[173]

[173] U.S. Department of Veterans Affairs. *VHA Emergency Management Program Guidebook* (2005). Chapter 9 Education, Training and Exercises: p. 9-2. Washington DC

Exhibit 1.2.1.2 Example timeline tool (worksheets A and B) for use in EM program development.

Worksheet A

Emergency Management Program Step	Year 1	Year 2	Year 3	End Product
List steps and activities here	*Indicate the year the step/activity is to be accomplished* *Development ________* *Maintenance __ __ __*			*Exactly what will the results be ?*

3 Year Program Overview

Worksheet B Emergency Management Program

Step:	**Estimate of Staff Time:**								**Cost:**			
End Product:	**Year 1**				**Year 2**				**Year 3**			
	Quarter				**Quarter**				**Quarter**			
Action Steps (Strategies)	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
List tasks and strategies for each activity required to complete this Step.			*Indicate the year and quarter the activity is to be completed.*									

- EM Program ongoing activities:

EM program component plan activities can be grouped according to the four phases of emergency management.

- Liaison and outreach efforts: These include conducting liaison and coordination activities that build support for the EM program within the organization and with key external entities in the community. Conducting resource assessments of community partners and support assets and participating in other appropriate community mitigation and preparedness activities are important components.

- Conducting or updating the Hazard Vulnerability Analysis (HVA): The Hazard Vulnerability Analysis (HVA) is the needs assessment for the EM program. This process identifies likely hazards, estimates the probability of their occurrence, and determines the consequences of the impacts on Mission Critical Systems (people, operating systems, suppliers, and so on). The Hazard Vulnerability Analysis serves as the information basis for all planning for the four phases of CEM, and so is a centrally important activity.

○ EM program component plan activities: The "phases" of CEM were established in order to group emergency-related activities, and each phase's activities are managed using management methods best suited for that phase. Similarly, the activities of the EM program itself may be planned according to CEM phases and "component" plans for mitigation, preparedness, response and recovery developed:

- Mitigation work plan: A primary goal of any healthcare system is organizational resiliency: assuring continuity of patient care operations and business operations in the face of a hazard impact. An activity within **continuity planning** (Lesson 1.3.3) identifies essential business functions, processes, and resources and develops strategies that attempt to prevent their interruption through mitigation activities, such as backup redundancies, substitution or hardening and other mitigation strategies. **The mitigation work plan** establishes the intended mitigation actions for an established time interval (usually an annual basis), defined within the strategic administrative planning of the EM program. This is addressed in detail in Lessons 1.4.1 and 1.4.2.

- Preparedness work plan: Preparedness activities focus on the development and maintenance of response and recovery capabilities. A central and recurring task in preparedness planning is to define the emergency response system (the "system description" or how assets are organized) and processes (the "concept of operations" or actions and interactions that must occur) to guide response. This system description/concept of operations with key processes and procedures becomes the central component of the "base plan" of the emergency operations plan (EOP).

The preparedness work plan establishes the intended preparedness actions that will address pre-selected issues during the defined time interval. The preparedness activities that must be addressed by the EMC should be organized into groupings so that subcommittees or work groups can be assigned to them. Categories include:

- Emergency operations plan documentation: Developing and revising/refining the written plan for response and recovery guidance and all of its components must be a closely coordinated activity. It extends from an overarching all-hazards **base plan** through **function-based planning** to **service-level planning.** This preparedness activity addresses the refinement and revision of templates, checklists, position descriptions, notifications lists, and other job aids.

- Resource management ***preparedness*** planning: Three categories of resource management are typically emphasized in Emergency Management:

  - Equipment & supplies: These activities include acquiring, storing in a ready state for mobilization, and maintaining equipment and supplies. Other activities include developing arrangements for acquiring resources, such as mutual aid memoranda, cooperative agreements, and contingency contracts.

  - Facilities: These activities include developing specialized facilities for emergency response and recovery, including the facility's incident command post and/or emergency operations center, decontamination facilities and alternate care sites.

  - Personnel resources: These activities include identifying, acquiring and maintaining key human resources that may be needed to support response operations. It also includes methods for volunteer recruitment, processing, assignment, and out-processing (see Module 1.5 for additional detail)

All hazards planning is a critical concept inherent to EM. This necessitates that commonalities amongst all hazards are emphasized FIRST (e.g. a Base Plan/EOP) and then hazard specific issues are addressed SECOND (e.g. hazard annex/EOP). This has historically not been the approach in health and medicine as efforts often revolve around a specific hazard (e.g. pandemic plan, mass casualty plan, etc.).

  - Instructional (education and training) activities: These are activities under "personnel resources" but are discussed separately here because of the extensive time and effort commitment that is required. Instruction is directed at designing, developing and conducting education and training that achieves specific emergency response and recovery competencies in the relevant personnel. Emergency management instruction therefore includes all activities that impart and maintain the knowledge, skills, and abilities necessary for personnel to activate, mobilize, and operate under emergency response and recovery conditions. The competency-based instruction should specify a certain level of proficiency ("awareness, operations, or specialist/expert") as discussed in Lesson 1.5.6.

- All-hazards planning: Consistent with the concepts of CEM, every successful EM program should include planning for all hazards across the four phases (mitigation, preparedness, response, recovery). The strategy is based upon a comprehensive Hazards Vulnerability Analysis (HVA) which, in simple terms, provides a structured analysis of the potential risks that an organization faces (the methodology for a comprehensive HVA is presented in Module 1.3). This analysis allows for realistic organizational planning. The activities addressed during mitigation are designed to prevent hazard occurrence or reduce the severity of any hazard impact on the organization. Preparedness planning allows for the development and implementation of a response and recovery plan to be used after hazard impact. The **Emergency Operations Plan** (EOP)[174] is the term utilized to describe the collective structure, process, and procedures used for all hazard **response** and for at least the early recovery phase. In this manner, common procedures and processes across all hazards are emphasized. Hazard-specific issues are addressed by developing short, concise action guidance. For healthcare organizations, this emergency operations planning includes not only the potential **surge** that they may have to address, but also the organizational continuity of operations, occupant emergency procedures, and support to external programs.

- Commitment to program evaluation and organizational learning: The most successful organizations are ones that are committed to

[174] The Joint Commission (TJC) in the past described the "Emergency Management Plan." This was consistent with their approach to having "management plans" for various major areas that they evaluate for accreditation. Beginning with the 2008 standards, TJC specifically refers to an "emergency operations plan" and describes *program* accreditation issues under the descriptor "emergency management."

constant self-evaluation, with revision as indicated. The same may be said of successful EM programs. Though discussion is often provided regarding the evaluation of the emergency operation plan, the overall EM program itself should be regularly evaluated and revised as appropriate. There are several approaches and vehicles for conducting evaluations (see Unit 4). The critical and frequently neglected next step after evaluations of any component of the EM program is to incorporate necessary changes. This "organizational learning" is a systematic process for assessing proposed changes to the system and incorporating accepted proposals to effect lasting change in system performance. This attains true organizational improvement, rather than the usual "lessons learned"[175] focused on individual performance. At first glance, these critical EM program activities (described at length in Unit 4) may seem onerous. Once thoroughly understood, they in reality make the conduct and maintenance of the EM program easier.

Work by others such as that from the Public Entity Risk Institute, support the above essential program elements (see Textbox 1.2.1.4). In addition, this work addresses more specific activities required of the EMP (see next section of text).

[175] Adapted from Barbera, JA, Macintyre AG. *Medical and Health Incident Management (MaHIM) System: A Comprehensive Functional System Description for Mass Casualty Medical and Health Incident Management* (December 2002); accessed January 31, 2010 at: www.gwu.edu/~icdrm

Textbox 1.2.1.4

Roles and Activities for an EM Program

Contributions from the social sciences have identified a number of organizational characteristics that contribute to effectiveness. Findings as summarized by PERI[176] are:

- Roles of officials are defined.
- Strong and definitive lines of command.
- Similar routine – disaster organizational structures.
- Emergency operations procedures are as close as possible to routine procedures.
- Good interpersonal relationships.
- Emergency planning is seen as an on-going activity.
- Use of an all-hazard approach.
- Conducting hazard mitigation/prevention activities.
- Providing motivation for involvement in emergency planning.
- Strong coordination between participating agencies.
- Public information function is clearly defined.
- Citizen/employee/user involvement.
- Ongoing monitoring and alerting procedures.
- Ability to maintain comprehensive records.

[176] Public Entity Risk Institute. *Characteristics of Effective Emergency Management Organizational Structures* (2001); accessed January 31, 2010 at: https://www.riskinstitute.org/peri/index.php?option=com_bookmarks&task=detail&id=90

Lesson 1.2.2 Emergency Management Program: Leadership and Direction

Lesson objectives

- *Explain the relationship of the facility emergency management (EM) program to everyday management, administrative, and operational activities.*
- *List important questions for organizational leadership to answer in demonstrating commitment to the emergency management program.*
- *List the organizational elements that should participate actively in the EM program process.*
- *List the roles and major responsibilities of the emergency program manager (EPM) and the emergency management committee (EMC).*
- *List important managerial strategies for the emergency management program.*

Introduction: Establishing Emergency Management Programmatic Leadership

Leadership of an emergency management (EM) program is clearly the responsibility of senior executives and administrators of the organization. Administrators make the decisions involving policies, procedures, priorities, and resource allocation as reflected in the EM program and the Emergency Operations Plan (EOP). The importance of effective emergency management to the overall organization is becoming increasingly recognized (Textbox 1.2.2.1).

EM programs require participation by the organization's leadership in order to be successful.

- Issues for the organization's leadership: Questions concerning this leadership do, however, arise and must be answered if the EM program is to properly mature and achieve its goal and objectives. These questions include:
    - What level of management should be involved?
    - What is the appropriate level of involvement?
    - What is the appropriate commitment of resources by the organization?

Textbox 1.2.2.1

Organizational Leadership in Emergency Management: The Commercial Private Sector Experience

The private sector has focused on emergency management program standards and leadership involvement over the past decade. Attention was particularly pronounced during the Y2K preparations and again after the 9/11 attacks that significantly impacted the business sector: the threat of computer malfunctions and the physical attack respectively. The experience and resultant philosophy, as described below, is relevant for healthcare system administrators responsible for emergency management and may inform senior healthcare system executives and governing boards.

The Business Roundtable, an association of chief executive officers of leading U.S. corporations with a combined workforce of more than 10 million employees, published *Committed to Protecting America: CEO Guide to Security Challenges (February 2005)* which makes several guiding statements related to the governance of business crisis and continuity management programs. This important document reflects the private sector's concern about hazard impacts and provides lessons for the healthcare organization's EM program leadership. The following statements were included in the Business Roundtable report:

"Evolving security threats and the potential for devastating damage following a terrorist attack require an enterprise-wide governance model to develop crisis management, business continuity, and disaster recovery programs.[177]"

"Given the nature of recent threats and the consequences of an attack, CEOs realize that they must find the determination, resources, and creativity to deploy real and flexible solutions. Strategic planning and prudent financial investments are essential to saving lives and supporting critical business operations in the event of another disaster."

"Without direct CEO involvement, crisis planning and recovery programs might not be elevated to a high enough level across the corporation."

Clearly, the Business Roundtable is emphasizing the necessity for top-level (CEO) involvement and support.

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[177] Business Roundtable. *Committed to Protecting America: CEO Guide to Security Challenges* (February 2005).: p. iii, pp. 86-88; accessed February 3, 2010 at: http://www.businessroundtable.org/sites/default/files/20050503003CEORiskMgmtGuideFINAL.pdf

- Organizational mission and its relationship to the mission of the EM Program: As noted earlier, the emergency program manager (EPM) and emergency management committee (EMC) should consider the organization's mission statement, code of ethics and core values, and other organizational directives in setting the strategic direction of the EM program. If clearly stated, widely communicated, and broadly understood, these documents provide an important context for guiding the actions of organizational personnel during **all conditions and circumstances**. Therefore, analysis of the mission, code of ethics, and core values can produce the context in which the emergency management program is developed and maintained.

    - Mission statement, code of ethics and core values: Emergency and disaster events are commonly associated with ambiguity of information, the need to make rapid decisions, and the lack of specific direction by supervisors. Normal organizational structure and lines of communication may be blurred. These characteristics increase the importance of the organization's mission, codes, and values in providing direction, since all should promote individuals and teams working toward a common goal. To better illustrate this important concept, the VHA mission statement is provided as a specific example in Textbox 1.2.2.2.

Strategic guidance for the EM program includes consideration of day-to-day mission statements, code of ethics, and core values in the development of program components.

Textbox 1.2.2.2

The Veterans Health Administration (VHA) Mission Statement[178]

"The mission of the Veterans Healthcare System is to serve the needs of America's veterans by providing primary care, specialized care, and related medical and social support services. To accomplish this mission, VHA needs to be a comprehensive, integrated healthcare system that provides excellence in healthcare value, excellence in service as defined by its customers, and excellence in education and research, and needs to be an organization characterized by exceptional accountability and by being an employer of choice."

The mission, codes and values are particularly important in the public service sector (e.g., EMS and Public Health). As much of the service provided by healthcare facilities can be considered "public" even

[178] Veteran Health Administration (VHA) General Information; VHA web site accessed January 31, 2010 at: http://www1.va.gov/health/AboutVHA.asp

Healthcare systems, even if they reside in the private sector, have important public sector responsibilities in relation to emergency response.

though they may be private sector institutions, they should be considered in the same manner. Generally, a public service organization's mission statement, code of ethics, and core values focus on the organization's commitment to the **communities** they serve. Regardless of circumstance, public service organizations generally strive to provide continuous service at the highest level of capability.

Healthcare systems responding to an emergency or disaster are responding as part of the emergency response community and are essentially acting in a public service capacity. Therefore, it is essential that in preparing for and responding to emergencies, healthcare systems consider the broader community within which they operate and understand the need for continuous service at the highest levels possible.

Healthcare system executives often delegate authority for the management of an EM program. For this to be effective, the individuals assigned must be empowered and receive appropriate support from executive leadership.

- EM and healthcare system leadership: The oversight of, and participation in, the EM program is no longer considered just an ancillary duty for upper and mid-level managers, department heads (key operating unit managers in VHA nomenclature), and senior executives. A robust and realistic EM program is a strategic imperative that requires attention and support at the very highest level of the organization. The tragic impact of 9/11 coupled with increased realization of infrastructure vulnerabilities have energized the U.S. government and the private sector to reassess business crisis and continuity management programs (the common terminology for EM program and continuity planning) and to elevate ownership and oversight to the appropriate organizational levels. Many healthcare system executives are adopting the same level of involvement.

  - Delegating authority for the EM program: In most healthcare organizations, senior management does not directly supervise day-to-day management of the EM program. This has traditionally been assigned to a subordinate management employee. The level of this subordinate position, however, has evolved in many institutions, as the field of emergency management has advanced over the past three decades. It has become increasingly clear that to be optimally effective, the day-to-day responsibility for coordinating emergency management must be assigned to an individual who has the support of the leaders of the organization.

  - Professionalism in healthcare EM: It has also become increasingly evident in healthcare systems that emergency management is a science and a professional discipline. It is no longer acceptable to recruit individuals to manage EM programs who merely have a passing interest or very little EM knowledge. The recognition of the importance of emergency management must begin with the recruitment or development of emergency management professionals to adequately conduct their EM program activities. This recognition has analogies with other healthcare system experience: at one time there were no medico-legal risk managers, infection control practitioners, or trauma coordinators in the healthcare industry. All three types of professionals are now considered essential to effectively operate major healthcare systems. A similar phenomenon is underway in recognizing healthcare system emergency management professionals.

The Emergency Program Manager and Emergency Management Committee

In many organizations, the position assigned direct supervision of the EM program is called an "emergency management coordinator." While this is a well-recognized position, the **importance of the management component of EM must be well-recognized.** The position directly supervising the EM program is, therefore, in this text, designated as the **emergency program manager (EPM)**.

- EPM position objectives: A primary role of the EPM is to develop and conduct an effective emergency management program. Behavioral researchers developed relevant advice for emergency managers more than two decades ago (see Textbox 1.2.2.3).

Disaster research provides important considerations for Emergency Program Managers.

Textbox 1.2.2.3

Advice to Emergency Program Managers[179]

Researchers asked experienced emergency program managers this question: "If you were in conversation with a new emergency program manager —someone just starting out —what would be the two or three most important pieces of advice you would offer...?" The following 12 themes provide important food for thought:

- Meet and greet agency heads.
- Establish personal credibility and commitment.
- Use past experience.
- Research your community.
- Ascertain the level of commitment and mission.
- Engage in consensus-building activities.
- Seek to coordinate, not control.

179 Drabek, Thomas E., *The Professional Emergency Manager: Structures and Strategies for Success* (1987), University of Colorado, Institute of Behavioral Science, pp. 58-59 and 236-243.

- Increase public awareness and knowledge
- Establish media relationships
- Continue professional development
- Establish a professional network
- Tenacity is essential.

The Emergency Program Manager holds responsibility for the program, but must be empowered to do so and must have a defined relationship with the organization's day-to-day administration.

When a disaster occurs, the entire community may be required to respond and become involved. Likewise, the response within the healthcare facility may impact everyone in some way. The EPM must therefore build and maintain interest, support, and participation by leadership and key managers. Without their active involvement, the EM program is a "vacuum program," with significant probability of failure should disaster occur. Obtaining and maintaining support and participation is one of the major challenges of anyone with the role of EPM. The EPM must achieve and maintain an integration of emergency management principles and practices into the day-to-day administration of the organization, and tailor the emergency management program to the needs and culture of the organization.

Overarching managerial strategies are presented in Lesson 1.2.1. Those presented here address program boundaries and integration into the organization's administrative (i.e., committee) structure. They promote attaining visibility, maintaining credibility, and establishing a foundation for an effective healthcare emergency management program. This includes working with the larger community to define the role of the healthcare organization in the community emergency response and addressing funding streams that will allow the healthcare organization to meet this "public safety" responsibility.[180]

The composition of the EM committee should reflect the various components of the organization.

- The EM committee (EMC): Without the participation and input from the various departments or services within the organization, the overall response to emergencies cannot be effectively managed. Wide "buy-in" and useful input is generally obtained in healthcare organizations through an EMC. The committee serves in an advisory capacity to the EPM and senior organizational leadership. While the emergency program manager serves as the staff member overseeing the EM program on a day-to-day basis, the input and commitment of stakeholders into the development, maintenance, and evaluation of the program ensures its long-term success. It is therefore important that the EMC membership includes leadership, key operating unit

[180] Barbera, J. A., MD, Macintyre, G. A., MD, DeAtley, C.A., PA-C, *Ambulances to Nowhere: America's Critical Shortfall in Medical Preparedness for Catastrophic Terrorism,* BCSIA Discussion Paper 2001-15, ESDP Discussion Paper ESDP-2001-07, John F. Kennedy School of Government, Harvard University, October 2001.

managers, and a balanced representation of the organization's operational and support units. It should also have a wide range of expertise. Most sophisticated EMCs will also solicit external representatives from relevant public and private entities external to the healthcare system.

Perhaps the most important role the committee plays is in the ongoing program evaluation and organizational learning (i.e., the review and revision of the EM program and its EOP), which benefits from the advice of personnel who understand the organization's systems. Important considerations for the EMC include:

- EMC integration into the organization's administrative hierarchy: The EMC should be incorporated into existing administrative and committee structures based upon organizational preference and resources. This should be in accordance with the organization's committee policy. Generally, the EMC should report to, or have a very close liaison with, the facility's Safety Committee.

- EMC authority: The committee shall include the EM program manager and others having the direct or delegated authority to commit resources from all key functional areas within the organization

- EMC mission: The EMC should establish a clearly defined mission statement that includes oversight of the EM program and its relationship to regular system operations. This essentially reflects the mission statement of the EM program itself. Any strategic guidance for the EMC should also set boundaries for the program (i.e. to prevent overlap with other administrative structures such as the safety committee).

- EPM as the lead: The EPM shall be appointed by the organization and be authorized to administer and conduct the emergency management program in consultation with the emergency management committee.

- Conformity: The emergency management program shall comply with applicable legislation, regulations, and industry codes of practice.

- Composition: The EMC membership reflects the organization's mission, administrative make-up, and other organization-specific details. To be multi-disciplinary and represent all key internal "stakeholder" units and positions, the membership of the EMC should include:

Recommended representation on the EM committee is provided (see text).

- Chairperson – usually the EPM acting on behalf of the organization’s director.
- Emergency Management Program Coordinator (if one exists as a support position to the EPM)

Committee membership includes representation from:

- Medical staff
- Nursing staff
- Infection Control
- Clinical support services
- Facilities Engineering (also called Physical Plant)
- Safety/Industrial Hygiene
- Acquisition and Materials Management
- Fiscal Services
- Security
- Emergency program manager or designee from any larger system that includes the healthcare facility (for VHA, this would be the Area Emergency Manager, who coordinate emergency management among regional VHA healthcare facilities)
- Key Operating Unit (i.e., Departmental) Managers.

- Roles of the EMC membership: The roles of members, including who they represent and what additional areas they are responsible for within the EM program, should be defined and well understood by the EMC membership. An adaptation of the Veteran’s Health Administration EMC guidance provides an example (see Textbox 1.2.2.4).

Textbox 1.2.2.4

VHA EMC Membership and Roles

Veterans Integrated Service Network (VISN) Director: The Network Director shall be responsible for the development, coordination, implementation, and evaluation of a Network-wide EM program. This program includes:

- Response to all hazards, threats, and events that adversely affect VHA facilities within the Network, including Outpatient Clinics and Consolidated Mail Outpatient Pharmacies (CMOPs).
- External response plans [i.e., VA-DoD Contingency Plans, National Disaster Medical System (NDMS) and the National Response Framework (NRF)].

Area Emergency Manager: The Area Emergency Manager (AEM) serves as a consultant to both Network Directors and Medical Center Directors for the purpose of developing EM programs. The AEM should also assist with education, exercises, and external coordination.

VISN Safety Manager/Industrial Hygienist: The VISN Safety Manager/Industrial Hygienist reviews and evaluates the EM program at all facilities within the Network.

Medical Center Director: The Medical Center Director is responsible for the development and implementation of an EM program that addresses all facilities under the control of the Medical Center. The Director must:

- Establish an EM committee.
- Define and approve the role of the Medical Center in the community during emergencies.
- Ensure that the EM program addresses internal and external hazards, threats, and events.

Associate Director or Equivalent: The Associate Director or other top management operation official shall serve as Chairperson of the EM committee. (Due to specific VHA considerations, this position chairs the EMC. The VHA designated position the "EM Coordinator" in effect serves as the Emergency Program Manager.)

Chief of Staff: The VA Medical Center (VAMC) Chief of Staff (COS) is responsible for the development, endorsement, training, and implementation of clinical guideline protocols for the EM program. The Chief of Staff must:

- Establish a workgroup of healthcare providers to review and edit, as appropriate, medical treatment and triage procedures contained in this guidance to meet the needs of the VAMC.
- Endorse all clinical treatment protocols distributed to VAMC healthcare providers addressing the delivery of patient care during an emergency.
- Ensure that healthcare providers receive the required educational training specific to various types of emergency situations, such as, blast injuries, crush injuries, human events, nuclear/biological/chemical injuries, and mass casualty triage.
- Ensure that the EOP addresses the medical chain-of-command to use during the emergency situation.
- Ensure appropriate safety measures are utilized to protect employees, staff and visitors within the VAMC.
- Review, approve, and endorse the mass-distribution of materials (e-mail, brochures, etc.) within the VAMC related to

The EM committee should conduct regularly scheduled and announced meetings. The conduct of these meetings should follow predetermined agendas (to ensure completion of material at hand) as well as be conducted within the timeframe allotted.

medical management of an emergency event.
- Maintain coordination of emergency medical activities with the Network Director or Medical Director, other VISN Chiefs of Staff (COS), and the VISN Healthcare Advisory Committee.
- Review and endorse Memoranda of Understanding (MOUs)/sharing agreements for medical resources, supplies, medical care, and alternate treatment sites.
- Ensure compliance with all medical treatment-related regulatory requirements [e.g., Emergency Medical Treatment for Active Labor Act (EMTALA), Consolidated Omnibus Budget Reconciliation Act (COBRA)].

Key Operations Managers: Key Operations Managers have responsibilities that have broad control of systems and operations of the facility (i.e., Chief of Engineering, Chief of Acquisition and Materiel Management, Chief of Security, etc.).

Emergency Program Coordinator: The Emergency Program Coordinator or Emergency Management Program Coordinator is the individual responsible for coordinating with the AEM, the staff within the VAMC, and the community and regulatory agencies. On a day-to-day basis, the EPC is responsible for ensuring that the EM program complies with all applicable regulations and standards. This position is typically assigned to the Facility Safety Officer, the Chief of Safety, or the Chief of Facilities.

Operating Unit Managers: The Operating Unit Managers are responsible for participating in the EM program, including planning, training and implementation during drills, exercises and actual threats/events.

Conducting the EM Committee Activities

- EMC meetings: The EMC should hold regularly scheduled meetings. The frequency of these meetings will be determined by the level of activity at any particular point in time. For example, during initial EM program development, major revisions, or after significant responses, the frequency of EMC meetings may be higher (e.g., two or three per month).

- EMC meeting management: The conduct of the EMC meetings should follow protocols established for any professional committee within the organization. These usually include:

- Agenda: Agendas established prior to the meetings, preferably developed and disseminated beforehand.

- Meeting facilitation: The EPM should facilitate the meetings. They should start on time, run crisply, adhere to the agenda and meeting time frame, avoid distracting side conversations and prevent lengthy discussions that should be addressed by subcommittees or other entities. This meeting discipline can be considered "training" for incident management meetings that occur during response.

- Meeting minutes: Meeting discussion and actions are documented. Minutes from the prior meeting are reviewed and formally accepted into the EM program records.

- Meeting decisions: Formal motions and votes on items of critical relevance are conducted.

- Invited guests: EMCs may provide an avenue for organizational integration with external emergency management and response organizations by inviting participation in specific EMC meetings when mutually important topics are discussed.

- Involving all staff in emergency management: Outside of the EMC, all personnel working within a healthcare organization require some level of interaction with the EM Program as they may have a role if a major hazard impact occurs. An understanding of the varying levels of involvement can help guide the pre-incident preparedness for range of personnel groups within the organization.

    - All personnel: Even in a major emergency or disaster, the majority of healthcare system workers will be performing in their usual job capacities. They may be working at a faster pace or more intensely, with longer hours and more reporting requirements, but they will generally be performing within their usual job descriptions. They should all, however, have an understanding of how the emergency response and recovery is managed and how they operate in relationship to the emergency response. This can be addressed through training based upon the "all personnel competencies" presented in Unit 5. These personnel should also be able to expect additional support in the performance of their duties (see Textbox 1.2.2.5), including relevant incident information so they can understand the situation from their individual and family perspectives.

    - Personnel with specific responsibilities for emergency response and recovery: A number of personnel with emergency response

All personnel within an organization have at least some minimal competencies that are required in relation to EM programs (usually awareness level or some limited operations level proficiencies).

The importance of competencies for all employees can be reflected in the concept that each individual has some role, no matter how limited, during response. Many positions not traditionally considered in preparedness planning are essential to continuity planning.

and recovery assignments will have roles that deviate significantly from their everyday responsibilities. For these personnel, funded time and opportunity to participate in the EM program development activities are important, and their involvement in EM education, training, and exercising is also important to success. This is presented in greater detail in Module 1.4.

Textbox 1.2.2.5

Healthcare System Support to Employees during Response

During an extended or unusual incident, support could include healthcare system management noting and complimenting employee actions, or ordering free refreshments or other "perks" such as overtime or bonus pay where appropriate. Living space and meals could become important in weather and other types of extended emergencies, and even day care services and living space for employee families may be vital to maintaining healthcare system services. Extra support staffing for specialty care providers may allow more focus upon highly skilled tasks, and so expand patient care capacity in areas such as critical care units.

- Recognize all levels of personnel in planning and preparedness: While most healthcare system emergency program managers have their attention focused upon organizational leaders and the larger emergency response system, it is important to recognize the contributions of non-clinical support during development and application of the EOP. Housekeeping, plant engineers, groundskeepers and others have critical roles for keeping a healthcare system operating safely and even greater ones in providing unusual surge capacity and capability. These personnel, however, may not have the same sense of the importance of their role or the same commitment to duty as clinical staff. This issue should be addressed in the EOP development and other preparedness activities and be a consideration, particularly for logistics, during emergency response (see example issue in Textbox 1.2.2.6).

Textbox 1.2.2.6

Hurricane Isabel and the Washington D.C. Area Hospital Experience

As Hurricane Isabel approached Washington, D.C., in the summer of 2003, hospitals focused upon maintaining clinical services. Unexpectedly, the Washington Metropolitan Transit Authority announced an impending closure of Metro, the mass transit rail system for the area. This news spread rapidly since many area residents were closely monitoring the media. Groundskeepers, housekeeping and other non-clinical staff at several hospitals immediately began to depart, since for many their only transportation was Metro. This was later acknowledged as a very reasonable perspective since overtime payment, food and sleeping arrangements, and eventual assistance in returning home had never been discussed with non-clinical support staff.

The resultant manpower gap required increased management attention, a greater strain on clinical staff, and additional expense. In many situations, nurses and other clinical personnel were performing clerical and housekeeping duties.

In hindsight, it was recognized that the issue could have been avoided by offers to arrange meals and living space for those staying for multiple shifts, taxi vouchers for those dependent upon public transportation, and overtime pay for extended shifts (all may be reimbursable expenses through FEMA during a declared disaster or emergency). Service could therefore have been maintained using usual staff in the usual manner. *(Authors' direct observations.)*

The use of Emergency Management Assumptions for guiding the EM Program

Consistent with the systems based approach discussed in lesson 1.2.1, the assumptions (see terminology textbox) upon which the EM program is based should be delineated and used when developing and conducting the EM program. Program assumptions include underlying facts concerning emergencies and disasters, organizational responsibilities, contextual parameters, and constraints that the system can be expected to encounter while conducting the EM program and when performing under actual operating conditions. In fact, the organization's mission, codes, and values discussed earlier in this lesson should be utilized as assumptions in development of the EM program.

Terminology alert!

Planning Assumptions: Statements of conditions accepted as true and that have influence over the development of a system. In emergency management, assumptions provide context, requirements, and situational realities that must be addressed in system planning and development and/or system operations. When these assumptions are extended to specific operations, they may require re-validation for a specific incident. For this very reason, operational assumptions (e.g., personnel and resource availability, alternate spaces, transportation, etc.) must be explicitly stated in operational plans for validation and/or plan adjustments.

To apply this concept, the EM program should delineate key organizational considerations as **planning assumptions** (see terminology textbox) during the development of the strategic administrative EM plan. These details will also serve to educate members of the EM committee and provide guidance for EM committee deliberations. Planning assumptions are presented according to categories in the next section of this text.

It is important for the healthcare system to understand that its response is evaluated by the public. A visibly competent response by a healthcare system reflects on the overall jurisdictional or system response in a community.

- The healthcare organization's roles and responsibility assumptions
  - Resiliency and continuity as the central mission: Central to the accomplishment of each EM program initiative is the goal of continuous or uninterrupted availability of a "comprehensive, integrated healthcare system" (quote from the VHA Mission Statement in Textbox 1.2.2.2).
  - Mission critical service to the community: Healthcare systems (like other public service organizations) commonly address life-saving and other critical activities during regular, everyday operations. They, therefore, do not have the latitude to shut down many of their normal operations until an emergency passes.
  - Establishing a priority scheme: Life-safety issues are very common in emergencies and disasters and take precedence over elective procedures and financial/business considerations. Predictable response issues that are secondary to personnel protection and life-saving intervention should be recognized and addressed in advance through a defined priority scheme.

- Addressing the bigger picture: Healthcare systems and other public service organizations cannot react to the exigency of the moment without considering the strategic implications for its ability to sustain its regular commitment to the community and usual patients. This includes maintaining the financial viability of the healthcare organization. The need for adequate funding for healthcare system response operations and similar considerations should therefore be included in the strategic EM program assumptions. Preparedness should address this important issue in advance of any incident.

- Visible competence as a mission assignment: The **visible competence** of public service organizations during and after hazard impact is vital to maintaining public confidence in authority. Similarly, the community's confidence in the healthcare organization's ability to provide medical and psychological healthcare during response is in part dependent upon the visible competence of healthcare systems. Addressing this in all aspects of the EM program may be very important during incident response.

- Incident Assumptions

  - Incident onset:

    - Hazard impacts can occur at any time, including nights and weekends when staffing is light and key personnel may be unavailable.
    - Emergencies occur in one of two ways: those that provide a warning period, such a hurricane; and those that provide no warning, such a loss of power. The organization must develop the ability to respond effectively to both situations.
    - The facility may not receive initial formal notification of an incident from jurisdictional authorities (e.g., initial indications may come from the media, other facilities in a jurisdiction posing questions, or from patients presenting for care).
    - Initial incident parameters may not be clear but facility response actions may still be required (e.g., partial activation with notifications and the establishment of a Planning Section that can track incident parameters as they unfold).
    - Incidents may occur in an obvious and rapid fashion (explosion) or may be slower and surreptitious in nature (infectious disease outbreak). In some situations, it may not initially be clear that an incident actually requires facility response.
    - Incidents may require brief healthcare facility response or may last days or longer.

An important incident response assumption for healthcare facilities relates to the possibility that organizations will not get formal notification of the occurrence of an incident. This type of assumption assists in developing realistic expectations and proactive initial response actions.

Other important response assumptions to consider relate to duration of response, donation of unwanted resources, and the potential for profiteering to exist during an incident.

- Incident impact assumptions

  - Hazard impacts may directly impact the healthcare facility. Examples include:

    - Structural impact from earthquake, explosion, or hurricane necessitating structural evaluation or evacuation.
    - Functional impact from loss of utilities, information systems or other mission critical systems.
    - Functional impact from very high patient volume and/or very unusual patient problems (e.g., radiation injury, chemical burns, large volume of pediatrics).
    - Personnel risk from the hazard, necessitating prophylaxis, vaccination, or treatment of personnel.

  - Hazard impacts may indirectly impact the healthcare facility. Examples include:

    - External incidents disrupting re-supply of critical equipment and supplies.
    - External incidents affecting personnel's ability or willingness to report for duty (e.g., road disruptions, security situations due to civil unrest, contagious disease closing schools or causing widespread family illness).

  - The focus of incident response may vary across a wide range. Incidents may involve the presentation of large numbers of patients (surge capacity) or the presentation of patients with unique care requirements (surge capability). Conversely and as noted above, incidents may not involve the generation of any new patients at all (e.g., power outage) but instead stress the organization in maintaining its usual health services capabilities.
  - Volunteers may present unsolicited to assist with the facility response.
  - Profiteering by medical assets and those that support medical assets is not expected but has occurred in the past after certain tragedies. A well-established EOP must be prepared to respond to this potential phenomenon (see Textbox 1.2.2.7).

Textbox 1.2.2.7

Example: Profiteering (Based on an Actual Incident but Without Identifiers)

A hospital has had direct structural impact after a hurricane, which includes damage to its roof. The first contractor available for repairs provides an estimate that appears inordinately expensive. The healthcare facility liaison officer has learned through coordination with the jurisdiction's emergency management agency what typical repair rates should be and that anti-profiteering regulations have been enacted by the governor. When confronted by the healthcare facility with this information, the contractor withdraws and another more suitable repair company is identified.

- Incident parameters indicating the healthcare facility may initiate demobilization may not always be obvious.

- Victim assumptions

  - Victims may arrive rapidly, independent of official jurisdictional response, and without pre-arrival notification to the facility.
  - Incident victims may represent a wide demographic group (all ages, different languages spoken, existing co-morbidities, etc.).
  - Based upon prior experience, the majority of incident victims may not require hospitalization after initial care.[181] While this could change during very unusual events, it may be considered as a planning assumption for the general EOP.
  - Some victims may not have physical injury or illness but still require evaluation and some intervention or at least observation. It is recommended the term "worried well" be avoided for this group as it is inaccurate and can be interpreted as a derogatory label. An alternative descriptor might be "Concerned, potentially exposed" or "Concerned, potentially injured". In some situations, this group of patients may significantly exceed the numbers of physically injured or ill.
  - Victims will follow direction if they perceive that something is being done for them and that they will receive adequate treatment and care.
  - Victims have expectations, including the assumptions inherent in normal medical care (respect/dignity, information privacy,

For incidents that involve casualties presenting for care, healthcare systems can develop assumptions based upon prior validated experiences.

[181] This is supported by data from incidents such as the US Embassy bombing in Nairobi, the Oklahoma City Bombing, WTC attack, anthrax dissemination events, and multiple natural hazard events.

competent medical providers) and the assumption that care providers have expert medical knowledge of the incident hazard. Victim expectations may be shaped by information provided through the media.

- Victims may serve as a resource to provide information about the scene and other incident parameters.
- For intentional incidents, perpetrators may present with other victims for evaluation and treatment.
- If properly managed and instructed, victims can provide some measure of self and “buddy” care.
- Convergence of patients, family members, the media and volunteers will occur during major emergencies at facilities near the incident, regardless of the capabilities of any particular healthcare facility.

○ Jurisdictional response assumptions

- Jurisdictional authorities may not be able to provide assistance to the healthcare facility, especially during the initial stages of a response.
- Initial information from the jurisdiction may be incomplete.
- In some situations, the jurisdiction may request assistance from the healthcare facility.
- The jurisdictional response mechanism may request formatted information from the healthcare facility in a timely fashion.

- EM Program Assumptions

○ EM program preparedness assumptions:

- The program will be developed over a period of years, guided by an inter-departmental EMC.
- The program will be focused on all hazards, with particular attention to adequacy for likely hazards and critical vulnerabilities identified through the Hazard Vulnerability Analysis (HVA).
- Certain capacities and capabilities will be constrained by the availability of funds and staff time, so priorities are established in conducting mitigation and preparedness. These priorities are informed by the HVA.
- Preparedness activities will be based upon response and recovery requirements as identified using the Hazard Vulnerability Analysis.
- The Emergency Operations Plan (EOP) will incorporate Incident Command System (ICS) principles consistent with the

National Incident Management System (NIMS).

- Clear-cut, well-delineated organizational roles and responsibilities must be developed and exercised to promote efficient response.
- Systems that perform the best during crisis are ones that are used or practiced regularly. This is the stated reason for the use of ICS during day-to-day operations in the fire service and serves as a motivation for the establishment of a day-to-day EM **information management function** where feasible in healthcare system operations (see Unit 3).
- Promulgation of useful response information is essential, both internal and external to the healthcare system. In the absence of good information, rumors, speculation, and dissent emerge.
- Continuity of operations that maintain a safe environment and occupant protection and security are the highest priorities during emergencies.
- Expanded (surge capacity) and specialized (surge capability) and support to external commitments during response can be addressed through careful planning and preparedness.
- Activities at the facility will rarely operate in a vacuum and usually take place in the context of the broader community response. Examples include:

  - Common terminology is essential to prevent confusion and potential harm when coordinating efforts of different organizational entities.
  - Healthcare system support needs (security, transportation, etc.) should be identified and assured through existing local and regional emergency constructs.
  - Facilities may be requested to support other healthcare facilities using mutual aid or cooperative assistance (i.e., reimbursed) provision of personnel, equipment, supplies, pharmaceuticals, or bed space).
  - Facilities may be asked to share arriving resources with other facilities (Federal or State provided supplies, blood supplies, vendor supplies that may support multiple hospitals in a jurisdiction).
  - Tactics applied at the facility may cause community confusion if not coordinated with the overall response community (e.g., doing nasal swabs as a diagnostic test for potential anthrax exposure).
  - Patient load may necessitate transfers to other facilities.
  - Media messages delivered by a facility may impact the activities at other facilities (and therefore should be coordinated with the overall response community).

Promoting and Sustaining Support for the EM Program

For the EM program to be successful, it must be promoted and supported within both the healthcare organization and the larger community. This explains the importance of the EM program to both the organization and to the larger community.

- Describing the complexity: To explain the complexity of healthcare emergency management, a hospital can be compared to a city in terms of its range of functions: a hospital combines the functions of patient care with those of a warehouse, a hotel, a laboratory, shopping center, and an office building. From another perspective, the various departments and organizational units within a medical center can be compared to the various agencies that provide services to the public. Hundreds and sometimes thousands of employees work in various buildings and on various shifts. Like a city, the hospital also has a surrounding community that is interested in its activities and within which it must integrate for effective planning.

- Maintaining awareness of and participation in the EM program: For those EPMs who have had the experience of going through a serious incident with good results and/or those who work in organizations regularly impacted by significant hazards (e.g., hurricanes), gaining the interest and support of the EMC and other personnel is not a major problem. On the other hand, for most organizations, disasters are not very common and running an effective EM program requires the EPM to understand how to maintain interest. A variety of techniques may be used by the EPM to manage the day-to-day program responsibilities and keep these efforts visible to all organizational personnel. One major requirement first is to understand and address "apathy."

    - Apathy is a principal barrier to creating a truly participatory EM planning process. To understand how to offset this attitude, it is important to appreciate the various reasons that it exists within organizations. Erik Auf der Heide, in his book titled, *Disaster Response, Principles of Preparation and Coordination*,[182] pointed out some of the major sources of apathy:

        - Apathy on the part of the general public (and healthcare system personnel) can be due to a **lack of awareness** in the potential for disasters.

[182] Available at http://orgmail2.coe-dmha.org/dr/Index.htm, accessed April 13, 2010.

- Even when people (including healthcare system personnel) are aware, they have a tendency to **underestimate the risk of or vulnerability** to a disaster.

- A third source of apathy is **reliance on manmade protective devices** such as levees, dams, warning systems, or construction techniques, despite recognition that these have limitations that actually prevent absolute protection.

- **Fatalism and denial** are also contributors to the general apathy about hazards and their impacts, including natural disasters and terrorism.

  These attitudes are commonly present even in the individuals who participate in the emergency management committee.

One of the greatest challenges to an EM program is apathy on the part of the organization's personnel. Understanding the causes of this can help with the development of methods to counter it.

- Addressing "apathy": Various approaches may address this issue.

  - Developing realistic, achievable interventions: *A well-run EM program develops achievable objectives and then demonstrably accomplishes them in a participatory fashion*. This highlights the importance of the strategic planning outlined in Lesson 1.2.1. When set objectives are achieved, they may be highlighted in various fashions. Exercises, job fairs with EM exhibits, and other EM-related activities visible to healthcare system executives and other personnel are avenues to demonstrate that appropriate effort can achieve significant results in protecting the organization and responding adequately.

An important way the efforts of the EM program can be "advertised" is to emphasize activities designed to promote organizational resiliency.

  - Highlighting the importance of the EM program: The primary objective of an EM program is protecting the resiliency of patient care operations and business functions (service and products) that comprise the organization's normal mission. For a healthcare system, the EM program supports an environment of competence, awareness, and security that allows the system's personnel to go about their every day activities knowing that there are policies, plans, and procedures that are designed to protect them and to allow system function in an emergency situation. This benefit should be publicized to the organization's personnel.

  - Presenting cost-benefit data: In order to advance the program initiatives, EPMs must ask for financial and other resources. Budgets for the EM program must compete with other more visible revenue-producing programs. In order to be successful, EPMs must have the ability to substantiate the cost-benefit aspects of the emergency management activities they seek to have funded. This may entail incorporation of data related to potential liabilities if specific EM program activities are not to be realized.

Day-to-day requirements exist for dissemination of EMP related information.

- <u>Communicating changes to the EM program and EOP and reporting important upcoming events</u>: To maintain awareness, respect for, and participation in the EM program, methods must be in place to convey the organization's EM-related activities and accomplishments to the organization's personnel, its governance board, response partners, other healthcare systems, the organizations "customers," and the general public. A method for disseminating EM program information is therefore needed during non-response periods, as well as during response (which is addressed in Units 2 and 3). This should be accomplished in a standardized fashion that makes it easy to do. The method should also set the information apart from all the regular administrative messages that are conveyed, so that they are recognizable as pertaining to emergency management issues.

- <u>Integration of the EM program into the community</u>: Those responsible for emergency management in the local community jurisdiction must create and maintain an effective interagency method to mitigate, prepare for, respond to, and recover from major threats to lives and livelihoods. It is important to recognize that plans alone are not effective unless they are supported by people and a process brought together by high-quality management skills. The healthcare organization must participate in this activity within the larger community. The EPM and EMC's external liaison function must be robust, with an available cadre of skilled personnel who can appropriately participate in all community EM activities. This may include participation in public sector preparedness efforts as well as the efforts established by other healthcare organizations in collaboration (see healthcare coalitions in Unit 2).

If the EM program is developed merely to comply with standards and regulations, the resultant effort can be expected to be sub-optimal.

- <u>Good-faith compliance with standards</u>: The EM program should make a good-faith effort to fully satisfy all relevant standards and regulations for the organization. TJC emergency management standards establish the requirement for emergency management planning for healthcare organizations and facilities. If healthcare systems treat emergency management activities like a "project" with a defined end product — a plan or plans — merely to satisfy the TJC requirement, the time and effort may be largely unproductive. Achieving and maintaining effective mitigation, preparedness, response, and recovery capabilities requires additional buy-in beyond checking boxes. Conversely, outstanding performance of the EM program in regulatory and accreditation surveys and in actual incidents can buy significant good-will within the executive element of the organization.

- EM program integration with everyday healthcare system operations: Although emergency response is generally outside of normal day-to-day healthcare facility operations, it must be continuously considered, practiced, and managed to develop and maintain the necessary support and levels of competence throughout the organization. Because healthcare system personnel are fully committed with their usual job tasking and do not have an abundance of time to set aside for emergency-management related activities, their existing jobs should support emergency preparedness to the maximum extent possible.

  - Match EM roles with everyday positions and tasks as much as possible: Emergency response requirements and tasks should match day-to-day organization and job assignments as closely as possible, with deviations recognized, documented, resourced, and practiced to a sufficient level.[183] For example, personnel who commonly manage staffing on an everyday basis are usually best qualified to supervise or conduct staffing duties for emergency response. Similarly, nursing supervisors who every day perform decision-making for allocation of resources are often the most qualified to directly manage the surge need for resources during incident response. This may be structured so that medical decision-making such as triaging patients in the emergency department for operative priority is separate from managing surge requirements for the emergency department. These issues are addressed in greater detail in later units.

Matching EM program positions and tasks with those of everyday position qualifications has distinct advantages in the ability to maintain the program.

[183] In an emergency and under high stress conditions, people often revert to their routine activity because it is what they know how to do and what they feel comfortable doing. It is therefore best to have their routine activity be as close to the emergency response activity as possible. This is a concept defined in the past by the U.S. military as the "doctrine of daily routine."

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Module 1.3

The Hazard Vulnerability Analysis and Continuity Planning

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Lesson 1.3.1 Overview: Hazard Vulnerability Analysis

Lesson Objectives

- *Define the key terms associated with hazards and risk associated with the HVA process.*
- *List specific vulnerabilities for residential healthcare organizations.*
- *List "contextual" factors that inform the HVA process.*
- *List administrative processes that are necessary for consideration in developing the healthcare organization HVA.*

Introduction

The Hazard Vulnerability Analysis (HVA) [see terminology textbox] process provides the information foundation for the four phases of Comprehensive Emergency Management (CEM) and, hence, is a critical part of the healthcare system emergency management (EM) program. Inherent in each of the phases of CEM is the goal of effectively and efficiently managing the myriad hazards that may adversely impact an organization's ability to provide its services and products. The HVA therefore provides the "**needs assessment**" for the EM program, and as such provides focus, and direction. **Understanding and conducting an appropriately detailed HVA process is the key to developing a risk-informed, all-hazard emergency management program.**

The Hazard Vulnerability Analysis provides the "needs assessment" for the EM program. It therefore directly impacts all components of the EM program.

Terminology alert!

Hazard Vulnerability Analysis: A systematic approach to identifying all hazards that may affect an organization and/or its community, assessing the risk (probability of hazard occurrence and the consequence for the organization) associated with each hazard and analyzing the findings to create a prioritized comparison of hazard vulnerabilities. The consequence, or "vulnerability," is related to both the impact on organizational function and the likely service demands created by the hazard impact.

- HVA terminology: The following definitions are provided to set the context for considering HVA and its importance to risk management, CEM, and the EM program.

The science of Risk Management has its origins in the business community. Its focus is on mitigation and preparedness activities.

Terminology alert!

Hazard - A potential or actual force, physical condition, or agent with the ability to cause human injury, illness, and/or death and significant damage to property, the environment, business operations, or other types of harm or loss.[184, 185]

Vulnerability **-** The likelihood of an organization being affected by a hazard and its susceptibility to the impact and consequences (injury, death, and damage) of the hazard.[186]

Risk **-** Risk is the product of probability (likelihood) and the impact/consequences of a hazard event.[187] Defining risk in this manner connotes that risk can be addressed by managing probability of occurrence (through mitigation and preparedness) and managing impact/consequences (through mitigation, preparedness, response, and recovery).

Risk Management[188] – A management science that employs the findings of the Hazards Vulnerability Analysis process to make strategic and tactical decisions on how risks will be treated – whether deferred, reduced (through mitigation and preparedness activities), transferred, or avoided.[189] Risk management provides the option of accepting certain levels of risk, at least temporarily, that are considered too low for resource allocation. Conversely, it provides the decision option to commit major resources that eliminate or avoid risks that are of such high probability and/or high consequence that they threaten the very

184 Adapted from FEMA. *Multi Hazard Identification and Assessment*. Washington, D.C. 1997.
185 Hazard is defined more generally in the National Response Plan (NRP) and National Incident Management System (NIMS) Glossaries: "Something that is potentially dangerous or harmful, often the root cause of an unwanted outcome. Department of Homeland Security." (NRF Glossary [Jan 2008], NIMS Glossary [Dec 2008]; Washington, D.C.).
186 Adapted from Department of Veterans Affairs. *Emergency Management Program Guidebook*. 2009; accessed February 9, 2010 at: http://www1.va.gov/emshg/page.cfm?pg=185
187 Adapted from Ansell, J. and F. Wharton. 1992. *Risk: Analysis, Assessment, and Management*. John Wiley & Sons. Chichester, p. 100.
188 The authors recognize that many medical professionals view "risk management" only as a subject related to "medical-legal" risk. It is important to note that this is only a narrow segment of total healthcare system risk and that all risk should be managed.
189 Adapted from Shaw G., and Harrald J. T*he Identification of the Core Competencies Required of Executive Level Business Crisis and Continuity Managers* (January 2004). The Electronic Journal of Homeland Security and Emergency Management, Berkeley Electronic Press.

existence of an organization. Risk management, which may be considered a subsection of overall emergency management, focuses upon mitigation and preparedness activities that prevent and/or reduce hazard impacts, and is considered by many to be its own discipline.[190,191]

- Healthcare system HVA: For a healthcare system, the hazard vulnerability analysis identifies potential emergencies that could affect the ability of the healthcare system to deliver its normal services, as well as the increased or unusual healthcare service needs created by the hazard impact. **A comprehensive HVA process must therefore identify and analyze all hazards that could significantly impact a facility and the community it serves.** The process for doing this is discussed extensively in lesson 1.3.2 but Textbox 1.3.1.1 discusses specific considerations for healthcare system vulnerability.

Textbox 1.3.1.1

Unique Characteristics of Healthcare Facilities[192]

The following points illustrate how the characteristics of how hospitals contribute to their overall vulnerability to hazards:

- Healthcare facilities are heavily occupied buildings; they house patients, staff, medical personnel, and visitors and are occupied 24 hours a day. In addition, the patient population requires extensive services and be completely dependent on others to provide life sustaining support.

- Healthcare facilities are very complex buildings combining the functions of a hotel, office, laboratory, and warehouse. Their physical layout has complicated spatial configurations due to functionality and sequential construction of additions. Patients and visitors may become spatially confused if lighting is compromised or hallways and room exits are blocked.

Healthcare facilities have unique characteristics (such as occupation 24 hours a day) that should be considered in the HVA.

[190] Carnegie Mellon Software Engineering Institute. *Continuous Risk Management Guidebook*. Accessed February 9, 2010 at: http://www.sei.cmu.edu/library/abstracts/books/crmguidebook.cfm

[191] Though the term "Risk Management" in the medical workplace is commonly associated with malpractice litigation, it has in fact, a much broader scope. Comprehensive risk management is a widely accepted practice and responsibility in all sectors: public, private, and not-for-profit.

[192] Adapted from: *U.S. Government. Seismic Considerations - Health Care Facilities* (May 1990), 150, pp. 9-11; Federal Emergency Management Agency, Washington, DC..

- Many healthcare facility supplies (pharmaceuticals, splints, bandages, etc.) are essential for patient survival and crucial for treatment of victims.

- Healthcare facility function is critically dependent upon utilities such as power, water supply, waste disposal, and communication. Life support, monitoring, diagnostic, and multiple other types of essential services must be powered.

- Patient records are vital for accurate patient treatment, particularly in the event of patient evacuation to other facilities. Damage to storage and records areas may render these items unavailable at the time when they are most needed.

- Many items in a healthcare facility are hazardous if overturned or damaged (drugs, chemicals, gasses, heavy equipment, and radiation devices). In addition, drugs may become a target of abusers if normal security breaks down.

- The business viability of many healthcare organizations depends upon its reputation among medical providers and the public in relation to its quality of medical services. Patient care mishaps and regulatory problems can have devastating organizational effects.

- In addition to internal problems caused by damage to the facility itself, community impact will result in an influx of injured people, as well as friends and relatives seeking information about hospital patients. At the time of greatest medical need, the facility may be physically compromised.

- Staffing may be compromised with personnel unable to get to work or worse, with staff sustaining injuries or deaths.

Important considerations: To increase the value of the HVA, the organization's "environment"[193] or context should provide strategic considerations for the overall HVA process. The following points highlight HVA concepts for healthcare system emergency managers:

- Addressing the community role: The HVA should be conducted in the context of the healthcare system's **mission and its community role**. The larger community-wide HVA should be

[193] In the organizational management research literature, the "environment" refers to the context in which the organization exists and operates (the "external environment") and the characteristics of the organization itself (the "internal environment").

analyzed in order to identify the generally recognized community hazards and understand the potential physical and business impacts. The HVA process for healthcare systems, however, cannot be completely adapted from the community process. It must extend further to fully identify specific risks related to healthcare system response requirements, including risks posed to the four healthcare emergency response and recovery capabilities (protection and security, continuity of operations, health and medical surge, and support to external programs).

- Incorporating the organization's cultural tradition: The HVA should reflect the social, economic, political, and legal realities of facility-based and community healthcare. For example, a community hospital in a very low-crime area that has a long tradition of "open doors" and easy access may decide to continue this approach to perimeter control, which may be different from an urban facility in a higher risk environment.

- Understanding the "business" of the organization: To fully analyze the vulnerabilities of an organization, its business processes must be understood. One established approach to accomplish this understanding is the Business Area Analysis (see textbox 1.3.1.2).

Textbox 1.3.1.2

Business Area Analysis

In the business arena, there are multiple processes that are conducted to evaluate the efficiency of the organization and its resilience. One such process is known as a **"business area analysis"** or BAA which is part of a larger business continuity program (discussed in Lesson 1.3.3). The BAA is an investigation of the business of an organization and it **examines day-to-day operations to determine critical functions and processes, their inter-dependencies, and their vulnerability to hazards**. The BAA varies from the HVA in its orientation: the BAA starts with a focus on the business (people, property, management, operations) itself, while the HVA starts with a focus on the hazards and their impact and consequences. The hazards a BAA focuses on are ones that impact the "business of the organization" and, therefore, should include hazards similar to those found in an HVA. The BAA, if it has been conducted by an organization, has typically been developed independently of EM efforts and yet it provides an important interface between normal business operations and the Hazard Vulnerability Analysis (HVA):

The program HVA should be conducted within the context of the organization's day-to-day business. This parallels existing approaches in business practice, such as the Business Area Analysis.

- The BAA can identify inefficiencies and ways to improve day-to-day operations and in the process decrease vulnerabilities.
- The HVA assesses the probability of a hazard and its impact on people, property, and operations. **The people, property, and operations are in fact the business of the organization and a continuous BAA process is necessary to assess and analyze the hazard impacts.**
- The EM program may use the BAA findings during the HVA process to design and implement efficient ways of protecting business operations, as well as service and products delivery. This should include designing and implementing business methods that support a surge of services and products during emergency response and recovery.

The HVA also considers the impact on the local population. For example, the impact on utility disruptions on vulnerable populations raises the possibility of these individuals presenting to hospitals for care.

- Full vulnerability considerations: The HVA must reflect not only facility impact but also community impact on patients, staff, and suppliers. For example, if a hazard impact affects community schooling, then employees with children may be significantly affected.

- The medically vulnerable: The "at-home" patient population in the community must be included in the hazard impact analysis. Those dependent upon electricity for life-critical medical equipment, upon mail delivery for important medications, upon assisted transportation for critical outpatient treatments, such as dialysis, and others will be difficult to support if not considered in the hazard vulnerability assessment. These issues can directly impact healthcare facilities, as medically fragile patients frequently seek assistance in hospitals when their outpatient support is interrupted.

Personnel involved with the EM program should understand the limitations of any HVA process. For example, assigning levels of risk to many hazards is an approximation, but still provides value for the relative assignment of priorities.

- Limitations of an HVA: Given the many unpredictable or poorly understood variables in hazard probability and organizational vulnerability, no HVA process or instrument can provide for precise stratification of risks/hazards for a facility or community. In many cases, the information available is limited, and the stratification of risks can be no more detailed than assigning broad categories such as "severe, moderate, and low." Despite this limitation, an organized, logical, and carefully executed HVA process provides the basis for developing relative priorities among the many options that can be implemented to manage risk with the limited resources available. This then serves as essential input to the mitigation, preparedness, and incident response and recovery planning. The HVA process and its component steps, as described in more detail in Lesson 1.3.2, provide a rational and defendable methodology for all CEM-related activities.

- <u>HVA administrative issues</u>: The following administrative issues should be considered by emergency managers as they develop or sustain their HVA process:

  - <u>The HVA's position in the context of CEM</u>: While it is important for the HVA to be a distinct "step" in the emergency management program and to be presented as a stand-alone document, the HVA is **not** an end in itself and must be fully integrated, as a living document, into the overall EM program process.

    - <u>The extent of an HVA</u>: The HVA process must include more than just the periodic completion of forms and the tabulation of numbers to sort hazards and set their priority. The results of the HVA should provide essential input to inform the annual mitigation and preparedness planning cycles. It also informs the development of response and recovery guidance.

    - <u>A continuous HVA process</u>: Ideally, the HVA process should be continuously considered and should be regularly revisited when new or changing conditions affect the facility **and the community**. Urgent changes to any part of the EM program process cannot wait for the next annual planning cycle for action. This continual attention to the HVA process facilitates a proactive approach to risk management throughout the CEM phases.

  - <u>Inclusive process</u>: Although the responsibility for the HVA is often assigned to a high-level committee such as the emergency management committee, the activity itself should be a highly inclusive process that considers multiple perspectives internal and external to the organization.

  - <u>Dynamic process</u>: The HVA product is subject to evaluation and change – in fact, re-evaluation and change are essential, reflecting the dynamic nature of the internal and external environments.

  - <u>Legal issues</u>: Like any other healthcare activity addressing risk, legal services should be consulted to assure that good-faith efforts do not inadvertently increase liability exposure.

  - <u>Accreditation issues</u>: Healthcare system emergency managers may be required to develop a HVA process that is consistent with The Joint Commission Standards. Current TJC standards state that "for each emergency identified in its HVA, the organization defines" mitigation activities, preparedness activities, response and

HVAs are only valuable if the results provide input into all phases of EM and if it is performed in a continuous manner.

If healthcare systems coordinate their HVA efforts with the jurisdiction, invaluable information can be exchanged between both parties.

recovery strategies and actions.[194] The final hazard list for each assessment cycle, therefore, should be representative of the significant vulnerabilities the organization faces (see below), but of reasonable length.

- Requisite details regarding vulnerabilities of selected hazards: For a comprehensive HVA that provides effective guidance across the EM program, additional understanding is important:

  - Understanding the current status of mitigation and preparedness: To fully understand the vulnerability of an organization to hazards, the *current* status of mitigation and preparedness accomplishments within the EM program must be understood (i.e., "Have actions been completed that decrease vulnerability or that increase the ability to respond and limit vulnerability?"). This requires that personnel performing the actual vulnerability analysis have an in-depth understanding of both the organization's normal operations and its EM program structure and function.

  - Understanding the detailed vulnerabilities of the organization to selected hazards: The Hazard Vulnerability Analysis has traditionally approached the assessment and analysis of each hazard individually, with only global comparisons between hazards to delineate which hazards are high priority for mitigation and preparedness. A more effective approach is **hazards** vulnerability analysis (stressing the plural) where all hazards are considered together to identify the most effective and efficient risk intervention measures. When hazard/risks are considered collectively rather than individually, the ability to identify and implement multi-hazard/risk reduction options is enhanced. This has obvious benefits in the current fiscal environment found in healthcare systems. To accomplish this comparison, each hazard/risk is decomposed into component vulnerabilities using common metrics that can then be compared across all hazards. For example, many hazards that threaten healthcare systems present similar life-safety issues for healthcare employees. By describing these vulnerabilities in common conceptual terms and categories (personal hazard exposure, perimeter security, and others) similarity in vulnerabilities can be indentified, suggesting interventions that significantly reduce risk across multiple hazards. This approach is incorporated into the HVA strategy presented later in this module.

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[194] The Joint Commission. *Environment of Care (2008), Elements of Performance A5-8 for EC 4.11*. The Joint Commission, Oakbrook Terrace, IL.

- The Veterans Health Administration (VHA) approach: The VHA has incorporated the HVA in its EM program for many years, as a component of its step-wise emergency management process. This approach provides an example strategy for other hospitals that are developing or revising their EM programs (see Textbox 1.3.1.3 for VHA guidance from 2005).

Textbox 1.3.1.3

The VHA-Specific Requirements for an HVA

As departmental policy, the VHA complies with all [Joint Commission (TJC)] standards. [TJC] standard EC.4.10[195] requires hospitals to conduct a Hazard Vulnerability Analysis (HVA) to identify potential emergencies that could affect the need for its services or its ability to provide those services. Accordingly, the *VHA Emergency Management Program Guidebook* includes the following foundational steps in the development and implementation of a “successful” emergency management program:

- Conduct a Hazard Vulnerability Analysis (HVA) and identify priority hazards, threats, and events (VHA EM Program Step 3).

- Develop incident-specific guidance for priority hazards, threats, and events (VHA EM Program Step 4).

The *VHA Emergency Management Program Guidebook* provides an HVA definition similar to that used in this text, stating the HVA is “a systematic approach to assessing the probability and consequence of hazards or threats/events that may affect the continued operation of the VAMC and surrounding community.”[196] The guidebook charges the EM committee at the VAMC with overall responsibility for the HVA. Additionally, the guidebook encourages participation at the operating unit management level and coordination with community emergency management planning, where available. A sample form is provided to assist in conducting an HVA as a basis for developing priorities among the many options that can reduce risk and enhance preparedness (see Exhibit 1.3.2.2). Specifically, the form provides for the identification of hazards and the qualitative ratings (not applicable, low, moderate, or high) of probability and

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[195] JCAHO. *Comprehensive Accreditation Manual for Hospitals*, 2006. Joint Commission on Accreditation of Healthcare Organizations, Oakbrook Terrace, IL

[196] Department of Veterans Affairs*. Emergency Management Program Guidebook*. 2005. Section 3.4.3. Veterans Health Administration, Washington DC.

impact (human, property, operational) to assist in the setting of priorities for incident-specific mitigation, preparedness, response, and recovery initiatives.

Lesson 1.3.2 The Hazard Vulnerability Analysis Process

Lesson Objectives

- *List common templates utilized for the HVA process and the consistent features across templates.*
- *List the sequential steps of a candidate comprehensive HVA process described in this text as applied to the healthcare system's mission and operations.*
- *List important considerations for establishing the context of the HVA process.*
- *List resources that can be utilized to generate potential hazard lists and probabilities.*
- *List the steps necessary for decomposing, comparing, and prioritizing specific vulnerabilities across multiple hazards.*
- *Explain how the results of the HVA are incorporated into the facility Mitigation Plan, Preparedness Plan, and Emergency Operations Plan.*
- *Explain the necessity of consulting with legal experts to determine the proper manner of documenting and communicating the results of the HVA.*

Introduction

This lesson builds upon the HVA definition and process framework introduced in the previous lesson by providing a more in-depth explanation of each of the process steps and their inter-dependencies.

- HVA – the process: The HVA process, simply put, is a method of identifying, assessing, analyzing and assigning relative value to risks. In other words, the HVA is used to identify potential hazard occurrences the organization could realistically confront. It then provides an understanding of the specific vulnerability elements related to each selected hazard. This includes the impacts on the **Mission Critical Systems (MCS) that support the emergency response and recovery capabilities of the organization**.[197] It also includes impacts external to the facility such as effects on patients at home, on staff, on suppliers, and on the healthy population that could create a large number of casualties or unusual casualty type. Finally, the HVA analyzes the findings to develop some priority-ranking scheme for potential interventions.

[197] The emergency response and recovery capabilities are categorized according to: health and medical surge, continuity of operations, protection and security, and support to external requirements. These are discussed in Lesson 1.1.1.

There are multiple examples of template HVA processes available for healthcare systems to evaluate. This text proposes a methodology that facilitates incorporation of HVA findings into components of the EM program.

Unfortunately, many efforts to conduct a Hazard Vulnerability Analysis only go so far as to "**identify**" hazards, with perhaps a superficial assessment of vulnerability. This limits the utility of the HVA by providing only a simple listing of hazards and their overall impacts and establishing an approximate ranking to demonstrate their relative importance.

The critical link of defining and prioritizing solutions through the EM program, via the annual mitigation and preparedness work plans and the response and recovery plan (the EOP), must be addressed systematically to fully benefit from an HVA. Because of the importance of the HVA information, it is recommended that an HVA be conducted early in EM program development, with annual updates by the organization. This may appear to be a daunting task at first glance. Once the initial HVA is accomplished, however, the annual HVA process primarily addresses changes to the internal and external organizational environment or consideration of newly recognized hazards.

- HVA examples: Multiple approaches for conducting an HVA have been published. Widely available examples include:
  - The Kaiser Permanente[198] template.
  - The New York University Medical Center HVA templates.[199]
  - The Federal Emergency Management Agency (FEMA) Vulnerability Analysis Chart.[200]
  - The VHA EM Program Guidebook HVA template (which also includes helpful examples).[201]

  The differences between each of the HVA methods or templates are relatively minor and primarily involve terminology differences.

[198] Kaiser Permanente. *Medical Center Hazard and Vulnerability Analysis* (2001). Kaiser Foundation Health Plan, accessed December 15, 2009 at: www.gnyha.org/eprc/general/templates/Hazard_Assessment_KP.pdf
[199] OSHA. *Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances, Appendix F*, accessed December 15, 2009 at: http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html#appf
[200] *Emergency Management Guide for Business and Industry*. FEMA 141 (October 1993), Appendix, accessed December 15, 2009 at: http://www.fema.gov/graphics/library/vulanal.gif
[201] *VHA EM Program Guidebook* (2009). Chapter 5, accessed February 9, 2010 at: http://www1.va.gov/emshg/page.cfm

Each requires the identification of hazards and the qualitative rating of the probability and impact (consequence) of that hazard to develop a hazard/vulnerability/risk prioritization scheme.

- ○ Though these HVA templates are extensively utilized, this publication proposes additional analytical steps to realize the full potential of the HVA process. This includes 1) understanding the individual elements of vulnerability for each hazard and 2) recognizing vulnerability elements that are common across multiple hazards (see below for more detail).

- Comprehensive HVA approach: This lesson presents a candidate six-step HVA process. This process should be considered within the context of supporting processes such as continuous communication, consultation, monitoring, and review throughout. The steps, as graphically displayed in Exhibit 1.3.2.1 and further explained in the text below are:

1) Establish the context for the HVA.

2) Identify the hazards.

3) Assess the hazard-associated “risk” (probability and consequence).

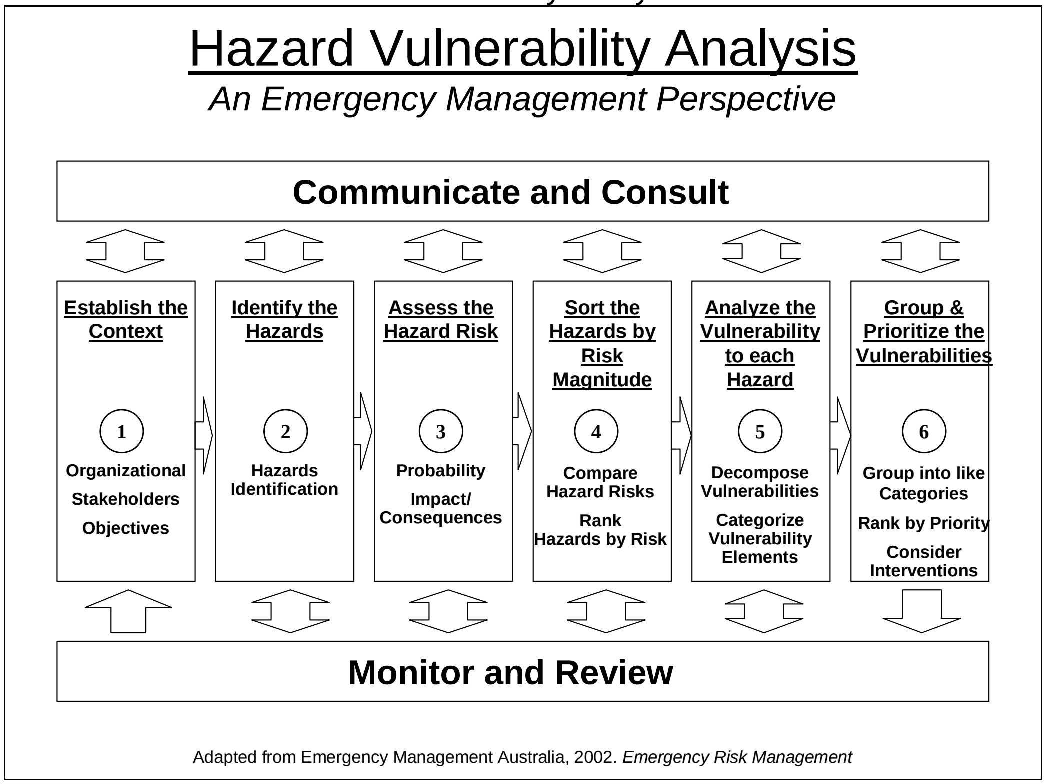
4) Sort the hazards by magnitude of risk.

5) Analyze the vulnerability of **mission-critical systems** to each individual hazard or hazard threat, and identify each vulnerability element.

6) Group and prioritize the vulnerabilities and consider risk interventions.

This provides a more comprehensive HVA process than the templates described earlier, which essentially focus upon steps 2, 3, and 4 in this diagram. The arrows shown in exhibit 1.3.2.1 portray the continuous and iterative nature of the HVA that serve to strengthen the individual steps and the process taken as a whole.

Exhibit 1.3.2.1 The Hazard Vulnerability Analysis Process



The first important step for the HVA process is to establish the context in which it is conducted. This includes establishing the role and boundaries of the organization as well as any major constraints such as financial limitations.

The HVA Process

- HVA Step 1 - Establish the context for the HVA: Establishing the **context**[202] for the HVA (and, essentially, for the overall EM program), is the logical starting point for the process (see Lesson 1.3.1). To accomplish this, the organizational context, the stakeholders, and the objectives for the HVA must be established.
  - Develop the context: The ***organizational context*** for the HVA is established based upon the healthcare system responsibilities and community roles, as well as the social, economic, political and legal realities. The context should be established through a process that captures input from a wide range of stakeholders.
    - The "community" boundaries are delineated, and the community and healthcare system profiles are defined. This step should delineate the organization's healthcare responsibilities to the community and region, including its support to external entities during emergencies and disasters.

[202] As noted in the previous lesson, the context refers to the external environment in which the organization operates, and the internal characteristics of the organization itself.

For example, in the VHA, the Veterans Integrated Service Network (VISN) would be acknowledged and considered, and its support for the National Disaster Medical System and deployed Federal Medical Stations is recognized. For a private hospital, participation in a healthcare coalition, including the provision of available mutual aid, is an important consideration.

- Values include the recognition of the role of the healthcare system in the overall community public safety mission and the acknowledgement that services must continue uninterrupted or even surge during and after a hazard impact. This can serve as a basis for establishing the need for public financial assistance to support healthcare emergency capabilities.[203]

- Major constraints on the organization for EM should be described. These may include:
  - Financial limitations for mitigation, preparedness, response, and recovery.
  - Regulatory constraints on a publicly owned system. For example, a U.S. Military hospital has a primary national security mission that cannot be subrogated to a local civilian response. Similarly, VHA healthcare system has constraints due to its primary Federal role of caring for veterans and supporting the Department of Defense.
  - Other legal and political issues. It is incumbent on the healthcare system leadership to identify and communicate these issues to the HVA team.

○ Establish the stakeholders group: The ***stakeholder group*** is the second critical component to establishing the context for in the HVA process. The EM committee accomplishes this by identifying and inviting representatives for all appropriate “stakeholders,” both internal and external to the facility. Stakeholders are defined as key people, groups of people, or institutions that may significantly influence the success of the process, plan, program or project (see VHA example in Textbox 1.3.2.1).

[203] Barbera J. A., Macintyre A.G., DeAtley C.A. *Ambulances to Nowhere: America's Critical Shortfall in Medical Preparedness for Catastrophic Terrorism* (October 2001), BCSIA Discussion Paper 2001-15, ESDP Discussion Paper ESDP-2001-07, John F. Kennedy School of Government, Harvard University.

Textbox 1.3.2.1

Stakeholders for the VHA Facility[204]

- VHA facility leadership
- VHA regional leadership (Veterans Integrated Service Network)
- Facility medical providers
- Facility safety personnel
- Facility security personnel
- Legal counsel (to review and ensure that the HVA process and documentation do not result in undue legal liability)
- Facility leaders from other medical facilities in the community
- Local Emergency Preparedness Council (LEPC)
- Community first responder agencies (fire, law enforcement, emergency medical services, public works, public health, the local emergency management agency, and others)
- Neighborhood and community representatives to provide insights from the general public. These may include neighborhood council leaders or individuals who have expressed interest.

Establishing the context for the HVA also includes identifying any "stakeholders" that should be potentially involved in the process.

- Other resource "stakeholders" not listed in the above text box may include military organizations with specialized medical expertise or other specific resources located in geographic proximity to the facility that could provide support.

- Establishing the stakeholder group can be facilitated by building on pre-existing entities. These may include the Local Emergency Planning Committees (LEPCs) under SARA Title III[205], mentioned in the textbox above. Some of these ongoing groups already bring many of the above listed participants together on a regular basis. Other stakeholder groups that may already exist include emergency management committees established as part of Healthcare Coalitions, medical societies, or hospital associations. Additionally, committees established for administering federal grant funds such as the Hospital

[204] Adapted from: US Department of Veterans Affairs. *Emergency Management Program Guidebook (2004).* Veterans Health Administration, Emergency Management Strategic Healthcare Group, Washington, DC.

[205] Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), known as SARA Title III. Sections 301-303 of the Act designate Local Emergency Planning Committees that address preparedness for known hazardous materials in the community. Information accessed December 16, 2009 at: http://www.epa.gov/oecaagct/lcra.html

Preparedness Program should be considered.[206] These venues can be used to incorporate the outside participants in the facility HVA process and can assist in establishing consistent analyses in the various facilities across a jurisdiction.

- Analyze the stakeholder group for adequacy: **Stakeholder analysis** is a technique that is increasingly employed in private industry to identify and assess the importance of stakeholders and thereby judge that an established stakeholder group is balanced and comprehensive.

  - Representation: To ensure that multiple perspectives are adequately considered and represented in the overall HVA process, the following steps help define a successful stakeholder analysis:[207]
    - Identify people, groups, and institutions that will influence your HVA process.
    - Develop inclusiveness strategies to avoid misconceptions and miscommunications. For example, simply inviting outsiders such as public health officials into the emergency management process may build effective support and reduce obstacles to successful implementation of your EM program.

  - Stakeholder range of expertise: Stakeholders can assist in identifying the social, economic, political, and legal realities and constraints that impact the EM program and HVA process. Stakeholders should therefore participate in all of the HVA steps. A balanced in relevant expertise across the stakeholder group is helpful.

- Setting the objectives for the HVA: If the HVA is being conducted in a system that already has an EOP, HVA objectives should support the healthcare organizations emergency response and recovery capabilities. The objectives might therefore include:

  - Protection and security: Maintain safety for personnel, current staff and visitors.

The HVA context should include its objectives.

[206] US Department of Health and Human Services. *Hospital Preparedness Program*, Assistant Secretary for Preparedness and Response, Office of Preparedness and Emergency Operations, accessed December 17, 2009 at: http://www.hhs.gov/aspr/opeo/hpp/

[207] Adapted from: Management Sciences for Health and United Nations Children Fund. *The Guide to Managing for Quality*, accessed December 16, 2009 at: http://erc.msh.org/quality/ittools/itstkan.cfm

- <u>Continuity</u>: Maintain the integrity of the healthcare organization, and its service commitment to the community.

- <u>Health and Medical surge</u>: Provide adequate healthcare services for incident patients.

- <u>Community support and additional accepted external requirements</u>: Provide support to the community response during emergencies and disasters. This includes any specific roles accepted by the hospital for community emergency response. For example: "provide medical support to the HAZMAT teams that would be cleaning up a major hazardous materials release in the community."

The second step in an HVA is to identify the potential hazards that could impact the healthcare system. There are several considerations including working with jurisdictional authorities who have also conducted an HVA.

All of the above considerations serve as background context for the HVA process in support of the EM program. The use of this material also extends beyond the HVA: it can be incorporated into the healthcare system's EM program and EOP background descriptions, so that the reader understands the role of the healthcare system in the overall community EM program.

- <u>HVA Step 2: Identify the hazards</u>: This activity involves the listing of all possible hazard types that could significantly impact healthcare system operations.

  - <u>Comprehensive hazard identification</u>: The full range of hazards should be captured for this initial list. The list includes hazards that don't directly or physically impact the healthcare system, but could generate excessive or unusual casualties or other unusual service needs. These surge needs can impact the ability of the healthcare system to provide its usual care under usual operating conditions. Hazard identification should also include hazards that, if they occur, could cause catastrophic business financial risk (litigation, liability payments, poor publicity and loss of normal business, and other considerations).

  - <u>Hazard identification strategy – agency resources</u>: While multiple resources are available to assist a facility in identifying hazards, an essential consideration is coordination with the community emergency management. Hazards that could potentially affect the facility are commonly hazards that may impact the larger community, and therefore have already been identified or are being defined by local government agencies. Additionally, community hazards must be analyzed to determine the potential number and types of casualties to expect from a community hazard occurrence.

- Hazard identification strategy – Web resources: Other sources are available to assist in hazard identification. These include local, State and national Web resources, FEMA and NOAA publications, and the 15 National Preparedness Scenarios established within the 2005 *National Preparedness Guidelines.*[208] Examples include: The Washington, D.C., Emergency Management Agency provides a list and description of the "18 Major Hazards" expected to impact the D.C. area[209]; the State of Virginia Department of Emergency Management provides a list and description of potential hazards[210]; FEMA provides historical data and links to hazard-related Websites.[211] These and other Web resources can provide important historical data and other details on hazards.

- Distinguishing the boundaries of "EM hazards": During the process of developing a comprehensive hazard list, the boundaries between hazards that are **primarily emergency management** versus those addressed primarily by **"general safety" or "environment of care"**[212] **during everyday hospital administration** may become indistinct. For example, is a technological failure in the laboratory or blood bank, which results in patient injury a hazard for the EM program to address or for the environment of care committee? It is part of everyday practice, but is it also a major business risk for the hospital's market share due to the importance of public trust in its services? Newborn abduction is an intentional hazard that similarly exists at the boundaries between everyday hospital practices (i.e., security) and emergency/incident response. The recognition and delineation of these domain boundary considerations highlights the importance of effectively integrating the emergency management committee into the organization's administrative committee architecture.

In some situations, the hazards identified may not be the primary responsibility of the EM program. For example, reputation crisis for the organization is commonly not addressed the EM program, but information support may be important during this crisis.

- Categorizing hazards by type: As internal, external, and combined hazards are identified, organizations may find it useful to group

[208] U.S, Department of Homeland Security. *National Preparedness Guidelines*. P. 37. (Sep 2007) accessed February 9, 2010 at: http://www.dhs.gov/xlibrary/assets/National_Preparedness_Guidelines.pdf .
[209] District of Columbia Homeland Security and Emergency Management Agency. *18 Major Hazards*; web site accessed December 16, 2009 at: http://dcema.dc.gov/dcema/cwp/view,a,1226,q,533340,dcemaNav,|31810|.asp
[210] Virginia Department of Emergency Management. *Threats & Emergencies*; web site accessed February 9, 2010 at: http://www.vaemergency.com/threats/index.cfm
[211] FEMA Websites, accessed February 10, 2020 at: http://www.fema.gov and http://www.fema.gov/hazard/map/index.shtm
[212] "Environment of care" is the term used by The Joint Commission in its survey of hospital safety practices for patient care.

The third step of the HVA is to assess the risk associated with each identified hazard. The specific risk can be hard to establish and assigning relative risk is perhaps more important for the process.

the hazards according to the following categories, where commonalities predominate in both vulnerabilities and in actions necessary to address the hazard risk:

- Natural hazards: Hazards that primarily consist of the forces of nature
  - For example, hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, earthquake, drought, lightning-caused wildfire, infectious disease epidemic.

- Technological hazards: Hazards that are primarily caused by unintentional malfunction of technology, including human and system actions.
  - For example, industrial, nuclear, or transportation accidents; power and other utility failure; information technology failure; hazardous materials release; and building collapse.

- Intentional hazards: Hazards that are caused primarily by deliberate human threat or executed action. These are usually criminal, civil disobedience, or terrorist in nature.
  - For example, civil strife, terrorism, or criminal attacks on the community, including special security events that could impact the healthcare facilities.

- HVA Step 3 - Assess the hazard-associated risk: "Risk" is a product of probability and vulnerability. Each hazard identified by the healthcare system should, therefore, be assessed **individually** according to its general probability of occurrence and its impact (consequences) on the organization. This essentially **approximates a level of risk**.

  - Risk assessment strategy: How the risk assessment is presented varies among reference sources (for examples, see the HVA template examples presented earlier in this lesson). Since the goal is to establish relative importance between hazards, most utilize a ranking system that assigns an approximate quantitative value to each individual hazard. This is intended to assist with the subsequent step (Step 4) of sorting the hazards by overall risk. This data is best formatted and presented as a work sheet (Excel or similar software). An excellent example is the tool described in the *VHA Emergency Management Program Guidebook*[213] as displayed in Exhibit 1.3.2.2. It must be cautioned, however, that the stakeholders developing this input to the assessment must have a common understanding of the rating measures in order for

[213] U.S. Department of Veterans Affairs. *Emergency Management Program Guidebook.* Appendix F. (2009) , Washington, D.C. Accessed February 9, 2010 at http://www1.va.gov/emshg/ ,

them to be consistent across all inputs. For example, the VHA template uses the relatively general measures of: Not Applicable (N/A), Low, Moderate, and High for probability and impact. This is adequate for the general purposes in which the findings are used.[214]

Exhibit 1.3.2.2: VHA tool for assessing and sorting hazards: Presentation of data in this type of format is recommended to facilitate collection of data and to enhance presentation to and understanding by stakeholders.

TYPE OF EVENT	SEVERITY CLASSIFICATION – LOW, MODERATE, HIGH				RANK
	PROBABILITY	HUMAN IMPACT	PROPERTY IMPACT	OPERA-TIONAL IMPACT	
	Likelihood this will occur within 1 year	*Possibility of death or injury*	*Physical losses and damages*	*Interruption of services*	SCORE 2 OR HIGHER IN ANY CATEGORY REQUIRES SOP
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2= Moderate 3 = High	0 = N/A 1 = Low 2= Moderate 3 = High	0 = N/A 1 = Low 2= Moderate 3 = High	*SOP REQUIRED YES OR NO?* *(If yes, for sample S OP, see section 0.2.1)*
Drought/ Dust Storm	2	1	0	2	YES

- Hazard probability: Assessing the probability of hazard occurrence can, in some situations, be difficult and often must be recognized as a very imprecise process. For recurring natural hazards, historical data and scientific probability studies may be helpful. For technological and intentional hazards, community data may be of assistance in establishing probability of occurrence. For intentional hazards, historical data may be very limited and current intelligence may be classified or otherwise unavailable. Without relevant and verifiable probability data, the assigned likelihood may

Components of risk include hazard probability and organizational vulnerability to the hazard. Probability can at times be difficult to ascertain definitively. Vulnerabilities are usually easier to establish.

[214] The VHA Emergency Management Program Guidebook explicitly states the requirement that an assigned probability and/or impact ranking of 2 or higher (moderate or high) with this tool qualifies the hazard as important enough to generate hazard-specific considerations in a "Standard Operating Procedure." [or "pre-plan" as described in Lesson 1.5.2].

become subjective, using only expert judgment of the work group to assign a general level of quantification.

- Vulnerability to the hazard: Assessment of hazards also includes establishing the expected impact the hazard may have on the healthcare organization. An excellent example again is provided in Exhibit 1.3.2.2, where hazard consequence is categorized according to **human impact, property impact,** and **operational impact**. While this value assignment assists with Step 4, sorting of hazards, a much more detailed analysis of the vulnerability to each significant hazard as a follow-on step is essential (see Step 5). For example, the vulnerability of a healthcare facility to a tornado hazard may be decomposed beyond "structural damage with resultant injuries and deaths." It may be further detailed to describe the most vulnerable locations of staff and patients (parking lots, facility entrances, glass enclosure areas, such as lobbies, solariums, and others); difficulties in notifying staff to take immediate protective actions; and other vulnerability details that can then suggest critical interventions to be addressed during mitigation and preparedness planning.

- Assigning a value to the hazard risk: The VHA and other widely used HVA models, including those referenced earlier in this section, use slightly different methods but this step produces the same general result: **an assigned value that may be used for sorting and ranking the hazards according to their general levels of risk**.

The fourth step of the HVA involves sorting the identified hazards by assigned risk. There are several strategies as to how this can be achieved.

- HVA Step 4 - Sort the hazards by magnitude of risk: This step consists primarily of assigning a relative level of importance to each hazard value from Step 3 and, therefore placing each hazard **in the context of the overall cohort of identified hazards**.

  - Sorting strategies: This sorting of hazard/risks (i.e., hazard likelihood and projected consequences) entails the comparison of the assigned risk (established in Step 3) associated with each hazard and the designation of each hazard to one of the broad categories (High Risk, Moderate Risk, and Low Risk) via mathematical[215,216] or expert judgment methods. While simple

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[215] Kaiser Permanente. *Medical Center Hazard and Vulnerability Analysis* (2001). Kaiser Foundation Health Plan, accessed February 10, 2010 at: www.gnyha.org/eprc/general/templates/Hazard_Assessment_KP.pdf

[216] McLaughlin SB. *Hazard Vulnerability Analysis* (2001). Health Facilities Management Series, American Society for Healthcare Engineering of the American Hospital Association, Chicago IL; accessed February 10, 2010 at: http://www.gnyha.org/eprc/general/guidelines/200102_HVA_TechDoc.pdf

numerical values are commonly used to represent probability and impact/consequence, the comparative value of the selected metrics must be fully understood for this ranking system to have merit. In other words, is a value of 3.92 essentially equal to a value of 4.15? If so, separating hazards with these two values into different categories may be misleading and cause judgment errors during later EM program activities. To address this, presenting the score for **all** identified hazards on a single graph or spreadsheet may allow appropriate grouping of hazards, with less reliance on specific (but relatively arbitrary) numerical assignments.

- The use of expert judgment: Expert judgment should enter into this hazard sorting and may result in a rearrangement of the results based upon specific intelligence related to probability and/or consequence. For example, a terrorist attack using biological agents may have almost unimaginable consequences that totally dwarf the probability considerations of such an event, elevating such an event to the top of the priority list. In the absence of specific intelligence, however, the rank of this hazard may be moved to below that of an incident with a better defined probability, such as a hurricane in a rural coastal community. Conversely, a lower ranked terrorist hazard may suddenly be elevated to the top of the hazard list based upon new threat information, thereby overriding the earlier expert judgment. The dynamic nature of the natural, technological, and intentional hazard environment necessitate an expert level review and judgment beyond mere numerical sorting.

- Assigning hazards to a deferred category: A second purpose of this step, equal in importance to identifying the highest risk hazards, is providing objective grounds for deferring or discounting the further examination of certain hazards. Program managers should search out strong background data that may eliminate an identified hazard as not having the significant potential to both occur and impact the facility (e.g., volcano – not in proximity to a volcano AND not in a volcanically active region). This will help narrow the hazard spectrum and better focus attention to likely hazards. Not all hazards can be addressed at once. Because of TJC accreditation requirements for hazard specific plans for each identified hazard, and other regulatory requirements, a number of low risk hazards may be deferred until a later annual work cycle.

- HVA Step 5 - Analyze the vulnerability to each individual hazard: Hazards are considered individually during the earlier assessment steps, and the risk of each hazard is compared only at a very macro level. This final **"analysis"** component of the HVA prompts the

Ranking of identified hazard risks may demonstrate some hazards with such low probability that their consideration may be deferred (as with Risk Management). Deferred hazards should be re-evaluated on a regular basis to verify the assumption is still valid.

The fifth step involves a more detailed analysis of the vulnerability to each hazard. This should begin with a decomposition of the vulnerability into components that can be compared across different hazards.

decision makers to look across all selected/prioritized hazards and vulnerabilities to **identify components of hazard risk that are common to multiple hazards**. This approach promotes the identification of options that reduce or eliminate vulnerabilities to multiple hazards through a single intervention (see Step 6) and therefore supports the most effective and efficient application of risk management/emergency management resources.

- Vulnerability analysis strategy: To accomplish this, the vulnerability to each hazard should be "decomposed" into significant elements that can be compared and/or grouped across the range of identified hazards. The component vulnerabilities for each hazard are objectively described in an "all-hazards" manner so that they can be grouped across hazard types. The categories used for global consequence assessment in the VHA's HVA (human impact, property impact, and operational impact) may serve as effective starting points, since the analysis is usually started (but not formally captured) in Step 3. The sub-categories' descriptions should refer to the processes and resources that are disrupted so that they can later be grouped across hazards according to the processes and resources that are affected. For example, a healthcare system's vulnerability to a hurricane would include:

  - Human Impact:
    - Inability for staff to reach or remain at, work: child/elder care responsibilities, transportation disruption, concern about personal property, loss of personal property, and others.
    - Injury to staff (at work or at home) and patients within the facility due to high winds and debris causing window/door glass failure.
    - Injury to staff while performing outdoor responsibilities for system function.

  - Property and Facilities impact:
    - Flooding, roof failures, and other water effects.
    - Wind and debris damage to buildings, outside equipment, vehicles, and other property on facility premises.
    - Storm surge effects if relevant.
    - Maintenance problems due to failure of personnel to report for work.

  - Operational (Business and Services) impact:
    - Patient flow/cash flow interruption.
    - Negative effects due to failure of personnel to report for work (include housekeeping and other important support personnel).

- Potential for need to evaluate and treat multiple casualties due to community impact (casualty types within the typical casualty profile).
- Utility loss affecting essential services, such as dialysis (loss of power and water), critical care, operative care, and emergency services (loss of power, suction, medical gases, and water).

- Categorizing the vulnerability findings: For each significant hazard, the vulnerability is analyzed, decomposed into elements, and **categorized in a format that will allow like vulnerability elements to be identified across all hazards.**

- HVA Step 6 - Group and prioritize the vulnerabilities and consider risk interventions: This step sorts and compares the vulnerability elements determined in Step 5.

  - Grouping and prioritizing strategy: It is very likely that some identical vulnerability elements (defined in step 5) will be present in a wide range of hazards that cross the natural, technological, and intentional hazard categories. **Similar vulnerability elements are grouped.** For example, nearby hazardous materials releases with explosive potential (technological or intentional), an approaching tornado, and a realistic truck bomb threat all make staff and patients vulnerable to the physical impact unless immediate protective actions are taken. This grouping may be accomplished according to the categories used by VHA in Step 3, or by the priority scheme in Textbox 1.3.2.2, which establishes an inherent relative value (listed in descending order). In the preceding example, the "grouped" vulnerability would likely be assigned a "high" priority (in a "high-moderate-low-none" impact priority classification scheme) when compared with other vulnerabilities in a systematic manner.

The sixth step involves grouping like vulnerabilities across hazards.

The grouped vulnerabilities are then considered according to a priority scheme. The scheme proposed in this text elevates life-safety threats to the highest priority.

Textbox 1.3.2.2

Vulnerability Groupings by Priority

1. Life-Safety threat (injury/illness, death, short-, and long-term health risk) – highest priority.[217]
2. Disruption of product or service delivery (external or internal impact affecting the organization's service or product output) – very high priority since the "product and services" of a healthcare system may have life-and-death consequences.
3. Business systems failure – high priority since they may affect product and service delivery.
4. Loss of customer/community trust and/or goodwill – for a healthcare system, this also a high priority because of the tight connection between trust/good will and service delivery.
5. Property and environment damage – important but not generally as high a priority until the magnitude affects categories 1-4.
6. Liability and legal/regulatory exposure – these are also important considerations, but less than 1-5. While these exposures may be addressed through legal actions, they may also be decreased by assuring the higher priority categories have been satisfactorily addressed.

The potential interventions that can be implemented to address the grouped and prioritized vulnerabilities are explored. The actual selection and implementation of these interventions occurs during mitigation and preparedness (and occasionally during response and recovery).

- Consider vulnerability interventions: The individual vulnerability elements are further analyzed to develop potential interventions (continuity planning – see Lesson 1.3.3) that would:

  - Reduce the likelihood of occurrence or reduce the consequences of a hazard that does occur (i.e., mitigation) or

  - Build response capacity and capability for effective response to the hazard event (i.e., preparedness).

  If the interventions are similar across hazards, this may prompt further grouping of vulnerability elements. At this step in the process, the vulnerability elements are grouped together. **Selection of interventions for implementation, however, is an activity that occurs later, during formal mitigation and/or**

[217] It may be helpful to list the hazards as internal (hazards originating within the healthcare system or its facilities that could generate victims or compromise operations), external (hazards originating outside the system), or combined. Responsibility for hazards generated within the system (such as fires and electrical power failures) may be weighted with additional importance when developing EM program component plans.

preparedness planning. Consideration of potential interventions is used only to prompt the grouping of vulnerability elements in a manner where they may be addressed through economy of scale or in a manner that provides greater benefit than if each element is individually addressed.

- Grouping example: For example, grouping of the perimeter vulnerability issues from internal events (e.g., infant abduction) and external events (e.g., terrorist attack, sudden security needs when an unexpected high-profile patient arrives, and others) help identify perimeter control and management interventions that are applicable to both types of incidents. Perimeter control and management directed inward or outward is generally a requirement for any hazard incident and is an essential component of managing most emergencies. Similarly, it becomes obvious that personnel vulnerability across a wide range of hazards may be reduced by having effective Occupant Emergency Procedures for facility evacuation, shelter in place, and other immediate protective actions. This readiness allows immediate action communication with personnel who should be pre-trained on the specific procedures.

- Communicate and consult: Communication and consultation within the healthcare facility and organization and with the community throughout the HVA process provides a means of inclusion and the establishment and management of realistic expectations for the EM program. Communication and consultation can also foster relationships and mutual understanding within the community (both healthcare and non-healthcare related organizations) that support the EM program. While a well-done HVA can be a time-consuming process, much of the information and analysis is applicable to all healthcare institutions within a locale, so joint efforts can decrease the individual workload.

The results of the HVA should be communicated internally and externally to the healthcare system. This promotes consistency within the organization and with other organizations and provides some sense of the efforts of the EM committee to organizational personnel.

- Monitor and review: **The HVA process is never actually "finished," as it is subject to re-analysis and revision or a repeating basis and when changes occur in the internal and external environments.** Continuous monitoring and review of findings from all steps should be conducted to keep the overall process relevant and on track with the EM program. Evaluative drills, exercises, and actual incidents will test the EM program, and both the positive and negative observations related to system vulnerabilities should be noted and analyzed. The HVA process also constitutes a major means of monitoring and reviewing any findings related to reduced as well to newly recognized vulnerabilities. For example, an exercise could examine whether a new process or procedure has effectively reduced a previously recognized vulnerability. Similarly, an exercise, a threat, or an actual hazard occurrence may prompt the recognition of a previously unidentified hazard and/or vulnerability.

The results of the HVA are applied throughout the four phases of Emergency Management (reflecting the importance of this process).

Application/Incorporation of HVA Findings

The HVA findings are applied throughout the EM program activities. Much of this is addressed as “continuity planning” in the next lesson. How they are applied through the four phases of EM is summarized below:

- Mitigation and preparedness planning: The potential interventions identified in HVA Step 6 are considered in the development (or revision) of the annual mitigation and preparedness planning (see Modules 1.4 and 1.5): The finished version of each annual work plan delineates the risk intervention measures that are selected for action during the time period covered by those plans.

- EOP guidance: Similarly, the Emergency Operations Plans and its response/recovery planning structure and process should reflect the findings of the HVA and the content of the mitigation and preparedness planning, with adjustments as indicated. HVA findings should be considered when evaluating and revising sections within each of the four capabilities categories in healthcare emergency response and recovery (protection and security, continuity of operations, medical surge, and support to external requirements). Guidance to address hazard-specific high risk can be provided through the development of EOP annexes. Healthcare systems may choose to use a similar approach as that presented in the VHA guidelines, where a specific risk requires the development of a hazard-specific guidance. This guidance is incorporated into a hazard-specific annex and its appendices to the EOP (see Lesson 1.5.2).

The HVA provides the opportunities identify risk reduction actions that can be cost-effective and sustainable.

- Capitalizing on opportunity to address high-risk hazards: The emergency program manager looks for opportunities throughout all phases of the EM program to implement the interventions for high-risk hazards in a cost-effective and sustainable manner. Opportunities may include:

    - Financial resources: Newly available grants and other financial assistance applied to mitigation and preparedness areas (such as monies from the DHHS Hospital Preparedness Program[218]).

- System motivation: Increased awareness and motivation to change based upon a recent incident or "near-miss," as occurred after the 2001 anthrax dissemination, where the hospitals in the National Capital area worked on closer coordination with each other and with public health.[219]

- Newly recognized hazards: Emerging new hazards (such as SARS[220]) or improved understanding of the potential impact of long-recognized hazards (such as occurred in 2001 with the reported off-gassing of ingested organophosphate pesticides[221]).

- Capital improvements: New capital projects that may make it affordable to implement major mitigation measures (such as the addition of a parking garage that could reasonably include a decontamination facility).

- New technology: New technologies may lower the cost of desired interventions. For example, the use of radio frequency activated door locks may allow installation of more rapid perimeter control without expensive wiring installation.

The HVA Process: An Example Application for a Specific Hazard

An example of processing a newly identified hazard through the six-step HVA process may serve to illustrate the value of this approach for an individual hazard. This example hazard is the intentional (terrorist) biological agent attack with anthrax, and the organization revising its HVA is a full-scale, tertiary care healthcare facility (HCF).

- Step 1. ***Establish the context***: The context of the overall HVA would have already been established before analysis of this individual hazard (see previous section). For the purposes of this example, key contextual concepts are presented:

  - Organizational context: The healthcare system's role, created by

An example of this text's proposed HVA process is provided with the example being the potential hazard of intentional release of the biological agent anthrax in a community.

[218] US Department of Health and Human Services. *Hospital Preparedness Program*, Assistant Secretary for Preparedness and Response, Office of Preparedness and Emergency Operations, accessed December 17, 2009 at: http://www.hhs.gov/aspr/opeo/hpp/
[219] Authors' (JAB, AGM) direct observations.
[220] Centers for Disease Control and Prevention. *Severe Acute Respiratory Syndrome* (2005); accessed December 18, 2009 at: http://www.cdc.gov/ncidod/sars/
[221] Ibid.

geographic, social, economic, political, and legal realities, is reviewed. Pertinent points include:

- The community: The jurisdiction and its community are politically active and have potential terrorist targets of significant national symbolic value.
  - The counter-terrorism capability in this particular community expresses concern about readiness for a biological powder release.
  - The local public health and EMS personnel traditionally look to this HCF for medical leadership for this community, as well as caring for their employees under emergent conditions. Prophylaxis for exposed public safety employees may be a responsibility.
  - Limitations in jurisdictional support (informational, logistical, and other) to the healthcare system have been defined.

- The HCF's emergency response role in the community: This HCF is the largest, most comprehensive HCF in the area and so will not be transferring patients to a "higher" level of care. This also creates the likelihood that with any hazard impact, a disproportionate number of victims will self-refer to this HCF, due to its reputation for treating unusual patients, rather than evenly distribute to all area HCFs.

- Financial implications for the HCF: The HCF has a thin operational margin during day-to-day operations and therefore cannot afford expensive purchases and lengthy staff training programs without outside funding. Consideration will be given to available program-specific funding, such as DHHS Hospital Preparedness Program grants, in determining the cost-benefit ratio of interventions that reduce risk.

- Contemporary events related to the hazard: These are also considered. Though unlikely for this example, recent incidents or law enforcement findings may indicate a markedly increased risk for this hazard. For example, have there been any recent threats, or are there any cases in which anthrax has been discovered in the possession of suspicious persons?

○ Stakeholder group selection and analysis: The usual stakeholders for the organization's HVA have been reviewed to determine particularly relevant input into this hazard analysis. Examples include: facility leadership, VHA regional leadership, facility medical providers (particularly emergency medicine, infectious disease, and critical care), nursing leaders, facility safety personnel, facility security personnel, legal counsel, public health and community medical facility leaders, community first responders, military personnel stationed locally with specific expertise, law enforcement, and others.

- ○ <u>HVA objectives</u>: The HVA objectives are tied to those already developed for the EM program and the EOP. These include: **maintaining a medically safe environment, sustaining the organization's functional integrity, adequately meeting the medical needs of patients, and supporting external requirements.** In VHA facilities, for example, other objectives exist such as the support to ESF #8[222] in the National Response Framework and support to the Department of Defense (i.e. support to external requirements). All primary objectives must be considered when evaluating whether the anthrax attack's impact on the healthcare system could compromise its ability to meet objectives across its emergency response and recovery capabilities.

- <u>Step 2. ***Identify the hazards***</u>: In this example, the intentional dissemination of anthrax has been identified as a significant potential hazard this organization may face.

- <u>Step 3. ***Assess the hazard-associated risk***</u>: Both probability and vulnerability are assessed to arrive at an approximated level of risk:

  - ○ <u>Probability assessment</u>: Assessing the probability of any given hazard can be difficult. For this example, little assistance may be provided by historical examples of hazard impact. Intentional anthrax dissemination has rarely occurred in the U.S. Interaction with community, State, and Federal stakeholders may provide some insight as to the intelligence information describing the likelihood of this hazard occurring in this community. Current socio-political events that indicate the potential for an intentional attack of any nature can be complex and unpredictable for the healthcare system to realistically interpret. In the end, the probability of this hazard impact may remain very general and described, for example, as "not likely (or very infrequent), but possible."

  - ○ <u>Vulnerability assessment</u>: For this example, there are multiple impacts and consequences to consider. The vulnerability to the potential for increased patient load is an example for consideration. In addition, the types of assistance patients would require could be

[222] ESF #8 is Emergency Support Function #8, *Public Health and Medical Services,* in the National Response Framework (Jan 2008), full version with ESFs; accessed February 10, 2010 at: http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf

unusual (screening for potential exposure based upon epidemiologic data received from public health, law enforcement, and media). This would necessarily require close coordination with jurisdictional public health authorities to determine who would provide mass prophylaxis, how they would refer suspected cases for evaluation, etc. Vulnerabilities related to supplies (adequate antibiotics on hand versus rapid re-supply) and to staff (if some have been infected by the agent or are concerned about the agent) should be considered. Could facility issues exist, such as loss of contaminated hospital areas or the loss of use of a ventilation system? Could loss of community trust impact the HCFs if public health and public safety are unable to effectively manage the incident? These provide only a sample of the consequences to be considered. The vulnerability of the community and those implications for the HCF must also be considered.

  - Designated risk level: A risk magnitude of "moderate" is assigned to this anthrax dissemination hazard. Even though the probability was judged as relatively low, the vulnerability of the HCF and the community was considered exceptionally high.

- Step 4. ***Sort the hazards by magnitude of risk***: A comparison of the assessed risk of intentional anthrax attack with the other hazard/risks identified and assessed by the HCF is accomplished.

  - Priority listing: The level of risk of a terrorist biological attack with anthrax is judged to be lower than some other pertinent hazard/risks for the HCF, such as its seismic risk (location is near a seismically active fault line), its civil disturbance risk (recent labor unrest with large demonstrations near the HCF's location), and several other hazard risks. At the same time, the risk is high enough that it will receive considerable attention by the emergency management committee in the upcoming mitigation and preparedness cycles, so further vulnerability analysis (Step 5) is warranted.

- Step 5. ***Analyze the vulnerability to each individual hazard***: The healthcare system's vulnerability to this intentional biological hazard is "decomposed" into significant elements that can be compared and/or grouped across the range of identified hazards. The component vulnerabilities for this hazard are therefore objectively described in an "all-hazards" manner so that they can be grouped across hazard types.

  - Human impact

- Staff impact: Staff illness and death, staff fear of illness for themselves or families, and staff inability to work extended hours may all impact absentee rates and manpower levels. Factors influencing this include:
  - Exposure (airborne and contact) in the HCF workplace if acutely exposed victims are not recognized and decontaminated prior to entry or if staff is not adequately protected with personal protective equipment (PPE).
  - Exposure in the community.

- Patient (non-incident) and visitor impact: There is the possibility that response will disrupt the care of regular patients and their families. This includes the risk of exposing patients and their families to anthrax, if contaminated patients have entered the HCF prior to decontamination.

- Victim impact: Many casualties (exposure, illness, and death) may occur. A very large number of "concerned and potentially exposed" people could be generated (see operational impact below).

○ Property impact

- Facility areas: Multiple hazards could cause the loss of use of certain work areas or even entire facilities. For this example, contaminated areas may be off-limits while they are decontaminated and then assessed and "certified" safe for use (e.g., mailroom after receipt of suspicious package).

- Medical equipment: The expected life span of reusable medical equipment may be prematurely expended due to increased use from higher patient volumes (or from higher frequency of expected use for each patient). There may not be enough equipment to address the patient surge needs.

○ Operational (Continuity and Service Surge) impact

- Business loss: Loss of regular patient business could occur due to high victim load, patient's fear of presenting to a potentially impacted facility, or loss of trust in the facility due to initial response problems. This could lead to a condition of business financial crisis.

- Staff shortage: Negative effects may be caused by failure of personnel to report for work, including housekeeping and other important support personnel.

- Operational surge issues: Anthrax may create a very large surge of patients requiring specialized interventions (decontamination for acute exposure, critical care services, unusual and/or expensive medications and other treatments).

- Information management problems: Obtaining accurate information about an evolving anthrax dissemination incident may be difficult. Informing personnel within the healthcare system and the ability to appropriately risk-stratify potentially exposed patients presenting for care may be compromised. This is a greater concern during terrorist incidents due to the additional complexity of law enforcement "close-hold" practices related to incident information.

- Supply shortages: Community impact may create an inability for suppliers to meet obligations to multiple facilities.

- Preparedness and coordination with community response: Close integration (operational, media message, etc.) with the jurisdictional response may be problematic, given the current jurisdictional response plans and the lack of experience with this type of incident.

- Step 6. ***Group and prioritize the vulnerabilities and consider risk interventions***: The vulnerabilities defined in Step 5 may be grouped with similar vulnerability elements identified for other hazards. Potential interventions by group may then be considered. The objective is to determine if addressing specific vulnerabilities to this hazard may also resolve individual vulnerabilities to multiple other hazards.

  - Hazard prevention: Unlikely to be accomplished by the HCF for the intentional anthrax hazard.

  - Minimize hazard impact:

    - Staff, visitor, and current patient exposure, property loss: Immediate, appropriate actions by HCF personnel may minimize this impact: preventing entrance or rapid removal and sequestering of contaminated "powder" victims; outside decontamination, adequate use of personal protective equipment by decontamination staff, and the securing and isolation of "suspicious packages." Interventions could include:
      - ❑ A "powder protocol" (which prompts use of the Occupant

Emergency Procedures).
- Staff education.
- Perimeter control, assuring prevention of facility contamination from any initial patient entry point and directing recently exposed patients to rapidly accessible outdoor decontamination facilities.

- Operations:
  - Continuity of operations by minimizing loss of use of clinical areas by:
    - preventing contamination (see above intervention), or
    - providing the ability to rapidly clean and re-occupy contaminated areas (probably very expensive).
  - Maximum HCF response: general EOP measures, adequate training for PPE, and development of a community-wide screening protocol to evaluate and risk-stratify potentially exposed victims in future incidents.

- Grouping vulnerability elements: A review of the vulnerability elements and potential interventions identifies multiple interventions that can be grouped according to their benefit across multiple hazards beyond anthrax. For example, the "powder protocol" could address all exposure scenarios; the PPE training benefits chemical and radiological hazard response as well as biological hazard response; and perimeter control is again identified as a needed intervention during most incidents. Cost-benefit analysis may indicate that perimeter control is of highest priority for preparedness, that isolating the ventilation system at the initial patient reception area may be a high priority (particularly if it can be accomplished reasonably during a planned renovation), and so on.

Post-HVA actions

- Applying and/or incorporating the HVA findings: Based upon the previous steps, potential risk reduction interventions and the analysis (cost-benefit, applicability across multiple hazards, sustainability, etc.) are documented. They are presented to the EMC for consideration and possible implementation in developing a Hazard Specific Annex to support the EM program's protection and security, continuity planning, and surge capabilities. Application examples include:

  - Mitigation planning: The mitigation work plan may establish a sequestered ventilation system for the emergency department area where patients are initially received and triaged.

- <u>Preparedness planning</u>: The preparedness work plan would likely:
  - Establish a rapidly available decontamination capability, with immediate staff access to appropriate PPE.
  - Spearhead a community healthcare initiative to develop a common protocol for evaluating potentially exposed patients with standardized evaluation and treatment parameters.
  - Training on the new procedures and equipment and an exercise to evaluate effectiveness would be indicated.
- <u>EOP (response guidance) planning</u>: Develop the powder protocol and other procedures that are specific to an anthrax release and document them in the form of a "powder protocol" or "powder operational procedures" as appendices or "pre-plans" included in a larger Biological Agent Hazard Annex in the EOP.[223]
- Review the original Biological Agent Hazard Annex. This may contain a checklist of readily available response options specific to powder exposure, such as contact information for technical experts who can be called upon for advice. The list of technical experts and their current contact information is developed and maintained as part of the resource management preparedness planning.
- <u>Recovery planning</u>: The Biological Agent Hazard Annex may also include a checklist of recommended recovery actions to return a contaminated area to full service, including contact information for environmental clean-up companies with appropriate technical expertise (also developed as part of preparedness activities).

[223] Some texts and guidance calls these procedures "Standard Operations Procedure", but for liability purposes as discussed in Module 1.5, it is recommended that this term be avoided.

Lesson 1.3.3 Continuity Planning and Organizational Resiliency

Lesson Objectives

- *Define Continuity of Operations (COOP) and continuity planning distinguishing between the two.*
- *Define Business Continuity Planning and how it relates to COOP.*
- *List example elements of continuity planning for each of the four CEM phases (mitigation, preparedness, response, and recovery).*

Introduction

Organizations from all sectors (public, private, and not-for-profit) carry the risk that hazards will impact their organization's business operations and/or their service/product operations, ranging from mere inconvenience and short-lived organizational disruption to complete destruction of the organization. Analyzing this hazard risk and the organization's vulnerability is a primary focus of the HVA (Lessons 1.3.1 and 1.3.2) and provides the basis for understanding the threat to an organization's resiliency. Further action is necessary, however, to assure continuity of both business and service operations in the face of potentially disruptive hazard impact.

The selection of interventions that can address specific vulnerabilities identified in the HVA process should be established and managed within the context of the EM program strategic administrative planning. Many of the interventions relate to continuity planning for the organization.

This lesson discusses the identification of activities to reduce or eliminate the risk of organizational[224] disruption. It describes actions that can be accomplished through mitigation, preparedness, response, and recovery planning accomplished in the EM program. **Continuity planning is the process that applies the HVA findings to these planning activities.** Their priority and level of support should be based upon the organization's perception of its relevant environment and the business and service risk contained within that environment. The selected actions must then be established and resourced during strategic administrative planning, as discussed in Module 1.2.

Continuity planning highlights the importance of HVA products and hence is presented in this module. In addition, the reader should understand that the concepts behind Continuity of Operations (see below) and Business Continuity have evolved in parallel to traditional Emergency Management. At the completion of this lesson, the reader should understand how Emergency Management processes incorporate many of the issues raised by continuity planning.

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[224] For the purpose of this lesson, the term "organization" refers to any entity in any sector (public, private, or not-for-profit) that provides a product or service to its customers.

The terms surrounding continuity planning come from different sources and disciplines and therefore, it becomes important to define these more precisely.

- Terminology: Since the terminology in this area can be very confusing, it is addressed at the outset.

  - Continuity of Operations (COOP) Program or Plan: Continuity of Operations (COOP) [see terminology textbox], as delineated in Federal Continuity Directives 1 and 2[225] focuses upon preserving **continuity of government services**, particularly as it relates to terrorism and acts of war. This concept was presented in Lesson 1.1.3, and is described well in the FEMA Emergency Management Institute course on the subject: "Continuity of Operations (COOP) is a Federal initiative, required by Presidential Directive, to ensure that Executive Branch departments and agencies are able to continue to perform their essential functions under a broad range of circumstances."[226]

> **Terminology alert!**
>
> ***Continuity of Operations (COOP) Program:*** "The collective activities of individual departments and agencies and their sub-components to ensure that their essential functions are performed."[227] In terms of Federal Continuity Directives 1 and 2, the term "COOP" refers primarily to continuity of government and is differentiated here from "continuity planning," which may be more comprehensive.

  - Business continuity: This professional area focused historically upon maintaining the **business operations** of an organization so that the service and products output was either not disrupted or could return to normal operations as rapidly as possible post-impact. The practice of business continuity has been termed "business continuity management."[228] Other terms that are commonly used by practicing professionals in this area include

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[225] U.S. Department of Homeland Security. *Federal Continuity Directives 1 and 2* (Feb 2008) accessed February 9, 2010 at: http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf and http://www.fema.gov/pdf/about/offices/fcd2.pdf respectively.

[226] Federal Emergency Management Agency. IS-547 *Introduction to Continuity of Operations (COOP)*, Lesson 1: Course Welcome and COOP Overview. FEMA Emergency Management Institute; accessed February 9, 2010 at: http://training.fema.gov/EMIWeb/IS/IS547lst.asp,

[227] Adapted from U.S. Department of Homeland *Security Federal Continuity Directives 1 and 2* (Feb 2008) accessed February 9, 2010 at: http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf and http://www.fema.gov/pdf/about/offices/fcd2.pdf respectively

[228] Continuity Central. *New to Business Continuity*; accessed February 9, 2010 at : http://www.continuitycentral.com/newtobusinesscontinuity.htm

"contingency planning" and "disaster recovery." Major activity in this field has historically been within the private and not-for-profit sectors, where the **risk to business operations** was the primary organizational risk they recognized when considering technological and natural hazards. The earthquake risk to technology-dependent California companies, for example, emphasized the importance of offsite record keeping and similar business protection measures, prompting significant industry growth in that area. The Y2K phenomenon[229] focused attention nationally upon business vulnerabilities created by computer dependency.

It has only been more recently that **direct risk to service and product output** has been widely recognized in many commercial and not-for-profit sectors. Recent descriptions by NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity Programs (see terminology textbox) have emphasized the relationship and similarities of business continuity to emergency management.

Terminology alert!

Business Continuity: "An ongoing process to ensure that the necessary steps are taken to identify the impact of potential losses and maintain viable recovery strategies, recovery plans and continuity of services."[230]

A more expanded definition of Business Continuity as a program was included in the NFPA 1600 (2004 Edition).

Business Continuity Program: "An ongoing process supported by senior management and funded to ensure that the necessary steps are taken to identify the impact of potential losses, maintain viable recovery strategies and recovery plans, and ensure continuity of services through personnel training, plan testing, and maintenance."[231,232]

[229] "Y2K" was the concern that legacy computer systems, programmed only for dates that began with "19" or used only the last two digits for dates, would crash at the beginning of the year 2000.
[230] NFPA 1600. *Standard on Disaster/Emergency Management and Business Continuity Programs* (2010 Edition), page 5. Accessed February 10, 2010 at: http://www.nfpa.org/assets/files//PDF/NFPA16002010.pdf
[231] NFPA 1600. *Standard on Disaster/Emergency Management and Business Continuity Programs* (2004 Edition), page 4.
[232] In the parlance of "Business Continuity," terminology varies from emergency management; business "recovery" includes actions that recover business system that may be considered part of the "response phase" in emergency management.

Many public and some private sector organizations do not specifically spell out "continuity of operations" as a stand alone concept, since the relevant activities are addressed in a well written EOP.

This text utilizes the term "continuity planning" to refer to all the activities related to ensuring mission critical business and service functions are maintained.

ASIS International,[233,234] a preeminent not-for-profit organization dedicated to increasing the effectiveness and productivity of security professionals, also uses "business continuity" as its primary term. ASIS published its "all sector" *Business Continuity Guideline* in 2005, and its *ANSI/*ASIS *Organizational* Resilience *Standard* in 2009; documents that complement the NFPA 1600 Standard and FCD 1 and 2 and provide a generic planning guide applicable to any organization. It makes the following statement to emphasize the importance of business continuity to organizational survival and success:

> "Recent world events have challenged us to prepare to manage previously unthinkable situations that may threaten the organization's future. The new challenge goes beyond the mere emergency response plan or disaster management activities that we previously employed. Organizations must now engage in a comprehensive process best described generically as Business Continuity. Today's threats require the creation of an ongoing, interactive process that serves to assure the continuation of an organization's core activities before, during, and most importantly, after a major crisis event. Regardless of the organization – for profit, not for profit, faith-based, non-governmental—its leadership has a duty to stakeholders to plan for its survival."[235]

- "Continuity of services" and "continuity of operations": The idea of organizational resiliency in the public safety and other public service organizations has been incorporated in their practice for many years and is the driving force behind the importance of the HVA. The continuity concept, however, is not described by any commonly used term, although "continuity of operations" (small case versus that used in COOP) is used by many sources to emphasize this important area. Continuity of services can be used to denote a primary attention on addressing the risk of service disruption. **A well-written, ICS-based EOP that includes functional, support, and incident-specific annexes (see Lesson 1.5.2) addresses many of the issues for continuity of operations and services.**

- Continuity planning: This all-encompassing term (see terminology

[233] ASIS International Web Site. *Business Continuity Guideline: A Practical Approach for Emergency Preparedness, Crisis Management, and Disaster Recovery* (2005); accessed February 9, 2010 at: http://www.asisonline.org/guidelines/guidelines.htm,.

[234] ASIS International Web Site. *ANSI/ASIS Organizational Resilience Standard* (2009); accessed February 9, 2010 at: http://www.asisonline.org/guidelines/or.xml

[235] ASIS International Web Site. *Business Continuity Guideline: A Practical Approach for Emergency Preparedness, Crisis Management, and Disaster Recovery (2005);* accessed February 9, 2010 at: http://www.asisonline.org/guidelines/guidelines.htm

textbox) is used in this text to refer to all activities that share the common goal of organizational continuity: sustainment and/or resumption and recovery of essential business functions and processes, continuity of leadership, and sustainment and/or resumption of service and product outputs under all conditions that could impact an organization.

Terminology alert!

Continuity planning: An internal effort within an organization to assure that mission-critical business and service functions are resistant to disruption from the broad range of likely natural, technological, and intentional (including terrorism) hazards. Accordingly, an effective EM program for healthcare systems addresses continuity planning across the four phases of mitigation, preparedness, response, and recovery to ensure that mission-critical business operations, patient care services, and ancillary and support functions continue with little or no interruption or return to function as rapidly as possible.

- ○ Continuity planning for healthcare systems: In this text, the term continuity planning for healthcare systems addresses both business continuity and continuity of operations related to patient care services.

Through a detailed examination of the various components of an EM program, one can visualize how the concepts of continuity planning are addressed.

- Healthcare system continuity planning across all phases of CEM: Within the private business sector, definitive standards and guidance for continuity planning have only recently gained widespread acceptance through NFPA 1600 *Standard on Disaster/Emergency Management and Business Continuity Programs* (see Lesson 1.1.3). **Continuity planning must be considered in all phases of Comprehensive Emergency Management.** Building upon the Hazard Vulnerability Analysis (HVA) process described in Lessons 1.3.1 and 1.3.2, continuity planning is therefore an essential component of the overall EM program. Examples from each phase of EM program management include:
  - ○ Program Leadership and Direction (Emergency manager and emergency management committee)
    - Identify mission critical ("essential") functions for continuity planning purposes.
    - Establish an order of succession and process for delegation of authority for organizational leadership as related to the EM

program.

- Mitigation planning
  - Accomplish “hardening” of mission critical systems.
  - Develop redundancy for mission-critical systems.

- Preparedness planning
  - Conduct education and training related to continuity of operations.
  - Establish exercises and other evaluation methodology to assess continuity capability and capacity.

- Response (Emergency Operations Plan)
  - Human Capital - Designation of mission-critical staff; Development of policies addressing personnel leave during emergencies and related actions.
  - Maintenance of vital records (both business and patient).
  - Management process for financial and reputational crises for the organization.
  - Delineate devolution of control and management.
  - Define alternate operating facilities.
  - Assure interoperable communications within and external to the organization.
  - Define order of succession and delegation of authority for managing emergency operations.
  - Formulate strategy and tactics for organizational reconstitution.

- Recovery planning
  - Identification of essential functions for priority recovery purposes.
  - Establishment of methods for high priority recovery of vital records and databases.

- Documenting healthcare system continuity planning – separate versus integrated documentation: Continuity elements, including those specifically denoted in FCD 1 and 2 (see Textbox 1.1.3.6) can be integrated into the Emergency Operations Plan (EOP) and other EM program component planning documents, or they can be established as a separate document and interface established with EOP processes. Both approaches to this issue are commonplace, and each organization should deliberately develop their own documentation strategy.

  - Integration into EM documents: Continuity planning may be documented through incorporation of planning elements into the

EOP and other EM program documents. To specifically address regulatory requirements to demonstrate a specific “COOP Plan,” a crosswalk of COOP requirements can be made with the appropriate sections in the EOP and EM program work plans. This may also assure that all mission-critical issues in COOP are adequately addressed in the organization’s EM documents. This “incorporation” approach ensures that the documents will be maximally useful when needed and essentially strengthens the EOP while maintaining a single all-hazard plan.

- ○ Separate document: If the path of using separate documents to delineate continuity planning is taken, these documents should be developed as **support annexes and/or incident annexes** to the EOP (see Lesson 1.5.4). The use of only a stand-alone “COOP Plan” creates the risk that it will not be operationally useful for complex hazard incidents that also have many issues beyond those addressed in COOP.

- Continuity planning – educational sources: DHS and FEMA have developed training courses and planning templates (see Textbox 1.3.3.1) to support the National Continuity Policy set forth in National Security Presidential Directive–5 and Homeland Security Presidential Directive-20. The Policy mandates that each Federal Department and Agency maintain a viable COOP capability. Nongovernmental agencies may also find this guidance useful.

Some healthcare systems may be required to develop separate continuity plans. This can be achieved by a cross walk of relevant concepts to the organization’s EOP or through the development of support annexes and incident specific appendices to the EOP.

Textbox 1.3.3.1

COOP Education Sources

The DHS Continuity of Operations Manager's Training Course – L548, is a 2.5 day in residence course that provides COOP training for Program Managers and personnel with COOP responsibilities at the Federal, State, Local and Tribal levels of government.[236] Additionally FEMA provides two on-line, independent study courses that are available to the general population:

Continuity of Operations Awareness Course: IS-546a[237]

Introduction to Continuity of Operations: IS 547[238]

Continuity of Operations (COOP) Program Manager: IS-548[239]

The private sector, in addition to internal Business Continuity planning, offers various services to all sectors through COOP development software, consultant services, and training. A search of the Internet using the term COOP will locate literally thousands of businesses, ranging from *Fortune 500* companies to small businesses and individuals offering COOP products and services.

The VHA, as a federal agency, must comply with FPC #65. The programs implemented provide valuable insight for all healthcare systems.

The VHA COOP Program: An Example

The VHA has established the policy that VA Medical Centers "and other essential VHA Facilities [e.g., Consolidated Mail Outpatient Pharmacies] must comply with the provisions of FCD 1 and 2. The *VHA EM Program Guidebook* provides a description, templates and an example of an "acceptable" Continuity of Operations (COOP) Plan to support facility

236 DHS Office of National Continuity Programs. *Training Announcement* (February 2010); accessed February 10, 2010 at: http://www.denver.feb.gov/useruploads/files/02-16-10_l548_coop_mgr.pdf

237 FEMA Emergency Management Institute. *Continuity of Operations Awareness Course*: IS – 546a; accessed February 10, 2020 at: http://www.training.fema.gov/emiweb/is/is546a.asp

238 FEMA Emergency Management Institute. *Introduction to Continuity of Operations*: IS 547; accessed February 9, 2010 at: http://www.training.fema.gov/EMIWeb/IS/is547.asp

239 FEMA Emergency Management Institute. *Continuity of Operations (COOP) Program Manager*: IS 548; accessed February 17, 2010 at: http://training.fema.gov/EMIWeb/IS/IS548.asp

level development.[240] Importantly, the VHA extends their continuity planning well beyond the mandated provisions in FCD 1 and 2.

- COOP and the VHA Mission: Simply stated, the VHA COOP supports the mission of the VHA by providing a planned and adequately resourced ability to maintain continuity of medical care across a broad spectrum of emergency conditions. Like its counterpart in private sector "business" (i.e., Business Continuity), a validated COOP makes good business sense. As is the case for continuity planning above, COOP considerations are addressed as "all-hazard" and incorporated into the mitigation, preparedness, response, and recovery planning of CEM. COOP may be most effective if it uses the EOP base plan and incorporates the many EOP "all-hazard" processes wherever applicable.

- COOP and the HVA: The Hazard Vulnerability Analysis (HVA) process, as described in Lesson 1.3.1 and 1.3.2, provides the foundation of COOP through the identification, analysis, and management of risks that may impact the healthcare system and the community. In the absence of unlimited resources, the COOP cannot absolutely guarantee continuity of operations for all eventualities. The HVA process, however, can focus COOP planning efforts and resources on the highest priorities and can provide a means of setting COOP objectives and measuring results during VHA EM Program mitigation and preparedness planning.

- COOP and VHA EM program guidance: To meet the COOP requirements of FCD 1 and 2, the *VHA EM Program Guidebook (2005)*[241] specifies VHA-specific process, plans, policies and procedures across the EM program that:

    - Identify and analyze functions and processes and their inter-relations within the organization and between the organization and its external environment,

    - Prioritize functions and processes based upon their contributions to the organization's mission, goals, and objectives,

    - Provide for the redundancy and safe keeping of vital records, information and data whether in printed or electronic form,

    - Specify succession to office and the delegation of authority during

[240] US Department of Veterans Affairs. *Emergency Management Program Guidebook (2005)*. Veterans Health Administration, Washington, DC.
[241] The current version of the VHA Emergency Management Program Guidebook is undergoing revisions and is not publicly available at the time of this writing.

emergency situations,

- ○ Specify alternate operating facilities that accommodate essential functions and processes,
- ○ Provide for interoperable communication,
- ○ Specify procedures for devolution (transfer of responsibilities and leadership) in the aftermath of a catastrophic event,
- ○ Provide awareness, training, direction and resources for personnel to meet their COOP responsibilities,
- ○ Validate the COOP Program and required capabilities through tests and exercises,
- ○ Maintain the COOP Program required capabilities.

- COOP plans and emergency response: During an emergency response, Standard Operating Procedures or Pre-plans are used to guide the initial response to a situation. The transition to the incident action planning process occurs as soon as practical.

- COOP and application templates: The VHA provides templates to assist with incorporating continuity planning across their EM program. Exhibit 1.3.3.1 demonstrates one VHA tool to prompt VA Medical Center emergency program managers to consider hazard vulnerabilities in developing response guidance during preparedness.

Exhibit 1.3.3.1 A VHA "Sample Operating Unit Template" for developing hazard-specific preparedness

Sample Operating Unit Template

DATE: ___________

OPERATING UNIT: ____________________________ **OPERATING UNIT MANAGER:** _______________________

Mission Critical System	Potential Problems	Contact for Assistance in Preparing for Potential Problems	Preparations to Make to Minimize Potential Problems	If there is an interruption in operations due t loss of Critical system, then: Assess the situation for:	Action required:
1. Lighting (Emergency Lights Available)			1.	1.	1.
2. Electrical Power (Generator Power Available)			1.	1.	1.
3. Steam Distribution			1.	1.	1.
4. Heating, Ventilation & Air Conditioning (HVAC)			1.	1.	1.
5. Room or Hood Exhaust			1.	1.	1.
6. Water Delivery			1.	1.	1.

☐ All contingency preparations have been completed

Personal/Family Preparedness and Continuity Planning

Personal and family preparedness planning is an important component of continuity planning.

Lesson 1.5.9 describes the importance of and procedures for personal and family preparedness for emergency response and recovery operations in general. COOP, with its particular response and recovery requirements, impacts this planning for Federal government agencies, but the considerations from continuity planning similarly apply for all healthcare system personnel expected to participate in emergency response and recovery. In many cases, the nature of the emergency incident may necessitate relocation of personnel and services on short notice to an alternate site for sustained operations of 30 days or longer, until normal operations are reconstituted. The decision on the location of the alternate facilities is driven by the HVA and may necessitate relocation beyond a typical commuting distance. Preparing for short notice relocation and potentially extended work periods are continuity responsibilities that personnel should fully understand. They should structure their personal and family preparedness plans accordingly.

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Module 1.4

Mitigation Planning for Healthcare Systems

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Lesson 1.4.1 Overview: Mitigation in Healthcare Emergency Management

Lesson objectives

- *Explain the purpose of mitigation planning in relation to the other phases of the EM program (preparedness, response, and recovery) for healthcare systems, highlighting the importance of continuity of patient care services and continuity of business operations.*
- *Explain the relationship between the HVA process and mitigation planning.*
- *Identify and describe the activities that support effective mitigation.*
- *Describe the relationship between the mitigation planning and the environment of care safety activities that should occur on a regular basis in healthcare facilities.*

Introduction

As used in emergency management, the mitigation refers to **activity that reduces or eliminates the likelihood of hazard occurrence or that eliminates or reduces the impact from a hazard if it does occur.**

- Mitigation and phases of CEM: Activities within comprehensive emergency management (CEM) are grouped into phases. While there is some temporal relationship within a phase, the best logic for grouping activities is their similarity in how they are best managed (see Lesson 1.1.2). Mitigation activities are usually undertaken during the time period prior to any imminent or actual hazard impact. **Mitigation may also occur during the recovery period** ("It is also used effectively after a disaster to reduce the risk of a repeat disaster."[242]). In fact, the immediate post-impact period may be the time when funding and interest for making change are the highest. While mitigation and preparedness activities may occur in the same time-frame, there is a distinction between the two based upon their purpose. Preparedness is focused upon building response and recovery capacity and capability, not primarily upon reduction of hazard risk as is the focus with mitigation. More important as a distinguishing feature is that mitigation activities tend to be managed differently from preparedness tasks. Similarly, mitigation is distinguished from response actions: once an **imminent** hazard impact (such as an approaching hurricane) or an **actual** hazard impact (a subtle new disease that is becoming epidemic) is

Mitigation activities may occur during the same time frame as preparedness activities but have a different focus. They may also occur during recovery from an incident as attention and finances may be more available at this point in time.

[242] FEMA. *Mitigation Program Development Guidance* (1987). Federal Emergency Management Agency; Washington, DC.

recognized, subsequent actions are considered part of response because that is how and when they are managed.

- Mitigation history: Early writings on CEM recognized "mitigation" as one of the four phases in "all-hazards" planning, but actually placed emphasis on "mitigation" as an activity that should take place **during and after the disaster recovery period**. This emphasis essentially acknowledged the lack of motivation by government leaders and the public to conduct mitigation efforts until after a hazard impact had been experienced [243] (see Exhibit 1.4.1.1). The promulgation of the Integrated Emergency Management System (IEMS) by FEMA in the early 1980s promoted a 13-step process for EM programs (see Textbox 1.1.2.4). This was the first national effort that emphasized the elevation of hazard analysis and mitigation planning to the same level of attention provided to preparedness, response and recovery activities.

The recent Homeland Security use of the term "mitigation" varies from the meaning intended by the traditional EM community.

- Mitigation terminology: The term mitigation, when used by disciplines beyond emergency management, varies from its use in emergency management. The variations should be understood, since they have created confusion.
  - Mitigation in HAZMAT: The term "mitigation" in hazardous materials response is used to describe actions taken **during a HAZMAT incident to prevent or reduce the environmental and human impact of the release**. Since Comprehensive Emergency Management groups all emergency management-related activities into phases through "time and function" relationships,[244] the actions that limit hazard impact during and immediately surrounding a HAZMAT release are considered response actions by emergency managers. Moreover, those activities are managed using response management (i.e., ICS) methods, further strengthening the reasoning for considering them separate from formal mitigation phase actions.
  - Mitigation in NIMS: The glossary of key terms in the original NIMS (2004)[245] also incorporated the HAZMAT use, indicating that

[243] Drabek, T. E., and Hoetmer, G. J. Editors. *Emergency Management: Principles and Practices for Local Government*, p. 135.
[244] NGA. *Comprehensive Emergency Management: A Governor's Guide* (1979), page 12. National Governor's Association, Washington DC.
[245] NIMS (2004) definition of Mitigation: The activities designed to reduce or eliminate risks to persons or property or to lessen the actual or potential effects or consequences of an incident. Mitigation measures may be implemented prior to, during, or after an incident. Mitigation measures are often informed by lessons learned from prior incidents. Mitigation involves ongoing actions to reduce exposure to, probability of, or potential loss from hazards. Measures may include zoning and building codes, floodplain buyouts, and

mitigation activities may occur "during" the incident. The NIMS revision in 2008 further changed the DHS definition of mitigation, excising reference to preventing hazard occurrence.[246] The Federal Government has emphasized the activities of **"Awareness"** and **"Prevention**"[247] in its homeland security initiatives, and so has been trying to remove "prevention" from the concept of EM mitigation. This is in part due to the increased focus by the intelligence community and law enforcement on preventing intentional hazards through the use of counter-terrorism, law enforcement, legal actions, and other non emergency management interventions.

In effect homeland security "prevention" refers to offensive counter-terrorism actions performed by others outside of scope of emergency management. The "prevention" in emergency management mitigation should continue to be managed the same way that reducing hazard occurrence or reducing vulnerability is managed. For example, fire mitigation initiatives include measures to eliminate the risk of fire as well as to decrease or eliminate vulnerability if a fire occurs. Having a separate fire prevention program, from a cost and management perspective, is counter-productive and conflicts with well established policy.[248,249] These variances are viewed as "industry applications" (in this situation, homeland security applications). Redefining long-standing, valid, and professional EM concepts to address continually shifting Federal policy is unnecessary and potentially disruptive.

As Homeland Security has evolved, activities such as "prevention" have been emphasized. From an Emergency Management perspective, these activities are either a part of mitigation or they are prevention activities outside the scope of Emergency Management.

For the purpose of this text and in consideration of the above explanation, the emergency management definition of mitigation is used.

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analysis of hazard- related data to determine where it is safe to build or locate temporary facilities. Mitigation can include efforts to educate governments, businesses, and the public on measures they can take to reduce loss and injury (*NIMS 2004 Glossary of Key Terms*).

[246] United States Department of Homeland Security. *National Incident Management System. (2008)*. Washington, DC; accessed December 22, 2009 at http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

[247] U.S. Department of Homeland Security. *National Incident Management System (NIMS)* (March, 2004); Washington, DC

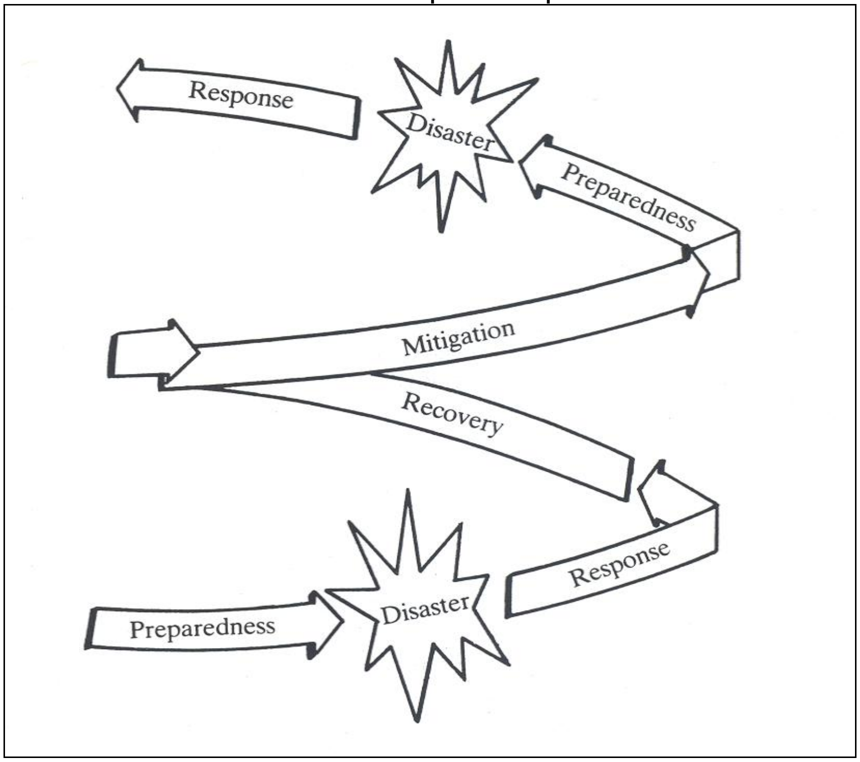
[248] "Mitigation, including prevention activities accomplished prior to imminent threat or impact, encourages long-term reduction of hazard vulnerability. The goal of mitigation is to decrease the need for response as opposed to simply increasing the response capability." (adapted from FEMA. *Integrating Manmade Hazards into Mitigation Planning* (Version 2.0, September 2003), Federal Emergency Management Agency, Washington D.C.

[249] 'Mitigation action involves lasting, often permanent, reduction of exposure to probability of or potential loss from hazard events.' FEMA. State and Local Guide (SLG)101, *Guide for All-Hazard Emergency Operations Planning (September 1996).* Federal Emergency Management Agency, Washington DC.

Mitigation activities should be maintained as separate and distinct from the HVA process. This distinction helps to emphasize the importance of the HVA contribution to all phases of the EM process.

- Relative importance of mitigation: As emergency management has evolved over the past several decades in the public sector, mitigation has received increasing recognition. In modern EM, it is viewed as equally important as the other phases of CEM.[250] It has only much more recently begun to receive the same level of recognition in business and industry, including healthcare organizations. As concern for resiliency of critical infrastructure extends well into private sector industry, attention to mitigation will continue to expand.

Exhibit 1.4.1.1 The relationship of the phases of CEM[251]



- Mitigation and its relationship to the HVA: Some educational and guidance documents blur the distinction between mitigation planning and the HVA. For example, steps in a mitigation planning process for terrorism promulgated by FEMA[252] include:

1) Identifying and organizing your resources.

[250] FEMA. T*he Integrated Emergency Management System: Process Overview* (1983), CPG 1-100. Federal Emergency Management Agency, Washington D.C.
[251] NGA. *Comprehensive Emergency Management: A Governor's Guide* (1979). U.S. Government Printing Office, Washington, D.C., p. 135. (Reprinted with permission of the International City/County Management Association, 777 North Capitol Street, NE, Suite 500, Washington, DC 20002. All rights reserved.)
[252] FEMA. *Integrating Manmade Hazards Into Mitigation Planning* (Version 2.0, September 2003), Federal Emergency Management Agency, Washington, DC.

2) Conducting a risk or threat assessment and estimating potential losses.

3) Identifying mitigation actions that will reduce the effects of the hazards and creating a strategy to place them in priority order.

4) Implementing the [mitigation] actions, evaluating the results, and keeping the plan [i.e., mitigation work plan] up-to-date.

In contrast, the comprehensive emergency management (CEM) approach requires a thorough HVA that **precedes** the development of a mitigation work plan. In fact, the HVA accomplishes much of Steps 1 and 2 from the above FEMA guidance.

Strategic considerations for mitigation planning should reflect a risk- based cost-benefit decision making process.

- Mitigation strategy: The most difficult issue in mitigation planning, at least for many emergency program managers, is selecting the most important vulnerabilities to address. The expanded HVA process presented in Module 1.3 develops a basis for consistently applying a prioritization strategy for hazards and vulnerabilities to be considered, but the actual priorities of mitigation planning include additional considerations. As with other activities in an EM program, a carefully considered strategy should be used while establishing and executing mitigation planning. This strategy should place planned mitigation actions in a priority order that reflect a risk and cost/benefit informed, decision-making process. Priority considerations include:

  - Addressing mission-critical systems: Potential impacts on mission-critical systems must be addressed, so that the healthcare organization's resiliency is assured and the organization can effectively respond.

  - Life-safety issues: Life-safety vulnerabilities for staff, patients, and visitors should have the highest priority, followed by vulnerabilities that threaten the organization's essential functions and long-term viability.

  - Internal versus external hazards: Mitigation considerations should include whether the hazard is generated external to versus internal to the healthcare system. A hazard that is internal and therefore is the direct responsibility of an organization is commonly considered a higher priority in the overall mitigation plan. See Textbox 1.4.1.1.

Textbox 1.4.1.1

Internal Hazards: An Example

A healthcare facility recognizes (during their HVA) that critical equipment in the ICU is no longer on back-up power outlets after recent renovations. This places certain patients at high risk during any potential power outage. The rewiring of the ICU becomes a high priority for the upcoming mitigation work plan.

The benefits that any one mitigation action can provide should be examined from multiple perspectives.

- The cost-benefit analysis: There is some cost to the organization for any individual mitigation action. To compare cost to benefit, it is helpful to examine the mitigation action benefits from multiple perspectives:

  - The “benefit” may be assessed by the ranked importance of an identified vulnerability in compromising essential healthcare operations (i.e., it is of such importance to maintain safe healthcare operations that it must be addressed).

  - The “benefit” can be assessed in terms of the projected reduction in financial vulnerability (i.e., either prevent the individual hazard occurrence or significantly decrease the consequences of the hazard impact, thereby avoiding loss of revenue or expensive restoration).

  - The “benefit” of the mitigation measure may address common vulnerability components across multiple hazard risks. For example, a security weakness such as uncontrolled entry may be a vulnerability noted across many hazard types, and a single intervention, such as door monitoring with a central electronic control of entrances, may reduce or eliminate this common vulnerability.

  - “Opportunity” factors should also be considered when assessing cost and benefit. For example, vulnerability reduction may be accomplished in a more cost-effective manner if undertaken during planned building renovations or new construction. In this situation, the mitigation measure is elevated to a higher priority for the current Mitigation Plan period. Including this opportunity factor prompts managers to address electrical system or structural vulnerabilities that otherwise may be prohibitively expensive if addressed through retrofitting.

- Business operations versus service and product output operations: The distinction between these two concepts was extensively discussed in Lesson 1.3.3. The commercial sector has focused EM efforts predominantly upon resiliency in business operations (see Textbox 1.4.1.2). Many healthcare organizations have begun to address mitigation issues for facility operations and healthcare services, but have paid significantly less attention to maintaining their business operations. A balanced mitigation work plan should be developed, guided by the HVA findings.

Healthcare system mitigation activities should address both impacts from medical surge and impacts that affect organizational resiliency.

Textbox 1.4.1.2

Business Continuity and Mitigation Planning

The private sector, through business continuity (also referred to as contingency planning, business crisis and continuity management programs, and other terms), has led all sectors in mitigation related to information technology. Dating back to the 1960s, many businesses realized their current and future reliance on information technology (IT) and electronic data and records.[253] Accordingly, their Business Area Analysis (see Textbox 1.3.1.2) and Risk Management processes (business specific processes analogous to the HVA) identified and analyzed hazards and vulnerabilities for the purpose of prioritizing and implementing mitigation actions. During the 1960s through the 1980s these efforts primarily focused upon IT specific requirements such as critical data backup and remote storage. As these efforts continued, business mitigation plans and activities have increasingly been expanded to all aspects of the business, including employee protection and communication and provisions for alternate work sites and equipment. This broader "continuity planning," with its focus on comprehensive organizational resiliency, is addressed in Lesson 1.3.3.

- VHA example of a mitigation strategy: The VHA mitigation strategy is summarized and presented as an example in Textbox 1.4.1.3.

- Communicating the established mitigation strategy and prioritization: As the mitigation plan is developed and implemented, it is important to succinctly communicate both the results and the rationale behind the risk-informed decision process to stakeholders (see communicating and consulting under HVA). This may be accomplished through a summary, such as that in Textbox 1.4.1.3.

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253 *How to Stay in Business When a Disaster Strikes* (1992). Software Magazine, Volume 12, No. 11, pages 48–52.

Textbox 1.4.1.3

Mitigation Strategy Points[254]

- Mitigation planning establishes interim and long-term actions to eliminate hazards or to reduce the impact of those hazards if they cannot be eliminated.
- The functional roles and responsibilities of internal and external agencies, organizations, departments, and individuals during mitigation, preparedness, response, and recovery are identified and considered in mitigation planning.
- Lines of authority for those agencies, organizations, departments, and individuals are identified.
- The mitigation strategy shall be based upon the results of the hazard identification and risk assessment, consequence analysis, program assessment, and operational experience and cost-benefit analysis.
- The mitigation strategy shall consider but not be limited to the following:
  a. The use of appropriate building construction standards.
  b. Hazard avoidance through appropriate land use practices.
  c. Relocation, retrofitting or removal of structures at risk.
  d. Removal or elimination of the hazard.
  e. Reduction or limitation of the amount or size of the hazard.
  f. Segregation of the hazard from that which is to be protected.
  g. Modification of the basic characteristics of the hazard.
  h. Control of the rate of release of the hazard.
  i. Provision of protective systems or equipment.
  j. Establishment of hazard warning and communications procedures.
  k. Redundancy or duplication of critical systems, equipment, information, operations, or materials.

Certain mitigation activities of the EM program may overlap or be consistent with other regular day-to-day administrative functions. The consistency of these efforts should be identified to prevent them from becoming duplicative.

Healthcare-specific Considerations in Mitigation Planning

- Mitigation and general safety activities: In healthcare system operations, it is important to recognize the relationship between Mitigation Planning and Environment of Care Safety Activities:

[254] Adapted from: US Department of Veterans Affairs. *Emergency Management Program Guidebook (2005)*. Veterans Health Administration, Washington, DC.

- Environment of care: Most modern hospitals have active safety committees that follow The Joint Commission (TJC) Environment of Care guidelines[255] that seek to minimize safety issues in everyday healthcare system operations. Safety measures that prevent adverse patient outcomes during everyday operations may be viewed as a continuum with mitigation measures that maintain a safe healthcare environment and continuity of healthcare services during larger emergencies. The transition from one to the other varies from organization to organization. At some point during safety and mitigation activities, however, initiatives may overlap or become duplicative if not closely coordinated. The interface between these two initiatives, therefore, should be carefully considered.

- Complementary actions between the EM program and other administrative functions: Mitigation priorities in the EM program should be considered in relationship to the vulnerability reductions sought for more common safety issues in the environment of care risk reduction. Coordinating the efforts may maximize benefits. For example, the common environment of care issue of fire safety and designation of fire evacuation routes should be coordinated with the EM program mitigation activities addressing safe exit routes for other hazards such as bomb threats.

- Joint mitigation planning with outside organizations: As with accomplishing the HVA (see identifying stakeholders in Lessons 1.3.1 and 1.3.2), it is advantageous to collaborate with other healthcare facilities and with non-healthcare response organizations when developing and conducting mitigation activities. This strategy may:

  - Inform the process: Coordinated planning could widen the range of mitigation measures to be considered (i.e., promote the sharing of best practices or innovative solutions).[256]

  - Minimize cost and/or maximize benefit: The larger “pool” of participants could provide opportunity for mitigation measures that would be too costly individually (e.g., without collective purchasing power) or where the benefit of the intervention is enhanced by other hospitals participating, making the cost/benefit ratio attractive (e.g., establishing a larger back-up cache that provides redundancy for mission-critical systems).

Healthcare systems may sometimes shy away from mitigation planning since it is often associated with expensive structural changes to the facility itself. In fact, many mitigation activities have minimal financial implications.

[255] The Joint Commission. *2008 Hospital Accreditation Standards*, Oakbrook, IL.
[256] Barbera J.A., Macintyre A.G.. J*ane’s Mass Casualty Handbook: Hospital* (2003). Surrey, UK: Jane’s Information Group, Ltd.

- Consider the full range of mitigation: Though some disciplines associate mitigation activities only with expensive structural changes or construction projects, it is important to recognize the breadth and scope of potential mitigation activities. For example, mitigation "tools" include procedural changes, insurance, and education/training related to hazard elimination or vulnerability reduction. Some of these may be incorporated into everyday quality improvement activities such as monitoring compliance with fire evacuation training and other occupant emergency procedures.

  - Other mitigation examples:

    - Designing and constructing healthcare facilities to avoid or minimize potential hazards (e.g., locate electronic and other infrastructure systems well above ground level in flood-prone areas). FEMA has published several guides that may be helpful in this area.

      - FEMA 543: Design Guide for Improving Critical Facility Safety from Flooding and High Winds: Providing Protection to People and Buildings (March 2007)[257]

      - FEMA 577: Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds: Providing Protection to People and Buildings (June 2007)[258]

    - Confining internal hazardous materials within the facilities to safe and secure areas to contain their release during any internal mishap (e.g., a spill or fire). Maintaining smaller quantities of potential hazardous materials, with more frequent re-ordering, may also reduce the risk of a significant hazardous materials incident.

    - Developing redundancy in hospital operating systems to ensure backup capability during an emergency.

    - Addressing the vulnerability of "improvements" in everyday operational functions, such as new technology, to assure that the improvements have not increased risk to mission-critical systems (textbox 1.4.1.4). In particular, mitigation related to the

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[257] FEMA 543: Design Guide for Improving Critical Facility Safety from Flooding and High Winds: Providing Protection to People and Buildings (March 2007) accessed January 6, 2010 at: http://www.fema.gov/library/viewRecord.do?id=2441

[258] FEMA 577: Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds: Providing Protection to People and Buildings (June 2007) accessed January 6, 2010 at http://www.fema.gov/library/viewRecord.do?id=2739

reduction in vulnerability of information technology should be addressed.

Textbox 1.4.1.4

Example of an Evolving Vulnerability and Mitigation Measure

The current trend towards paperless documentation systems (electronic medical records and others) has made healthcare operations more efficient but may also have increased hazard vulnerability. Hospitals are required to have back-up generators that supply continued power to critical life-support systems in case of a power failure. Some building codes designate the back-up power system with the installment of "red power outlets" to indicate which outlets will continue to be powered through the back-up power supply. The widespread location of computer interfaces for the paperless medical record, however, may in many facilities be outpacing the availability of power outlets linked to the back-up power system. Mitigation activities could include increasing their availability to avoid paperless ordering and information disruptions during electrical power outages.

- Protecting communication systems (both internal and external) and computer infrastructure from accidental or deliberate disruption; this could also include maintaining a stand-by capability to return to paper-based systems if needed. A continuity planning consideration, for example, includes additional repositories (offsite) of electronic medical records.

- Mitigation measures may include activities that reduce the risk of receiving unusual patient types, or excessive patient numbers, that could affect hospital operations. These include educating the public in recognizing and avoiding hazardous materials spills and other preventive measures.

- Education of healthcare system personnel to reduce vulnerability to hazards. For example, publicizing the importance of wearing identification (ID) badges and challenging individuals without an ID or visitor's pass can be considered a mitigation measure that reduces the risk of multiple intentional hazards. While this is important for everyday safety, it mitigates potential major emergencies as well.

- <u>Mitigation actions and unintended vulnerability</u>: The products of mitigation actions must also be considered for their vulnerability. For example, when evaluating potential "back-up systems" designed to reduce vulnerability, they should also be assessed for their individual, specific vulnerability to hazards, (see Textbox1.4.1.5). Interventions to address an identified vulnerability can create an equally dangerous new one – the classic example is window bars to mitigate crime causing loss of life in fires. Additionally, some mitigation measures require programs for testing, inspecting, and conducting preventive maintenance on back-up systems and facility safety equipment.

Textbox 1.4.1.5

Examples of Incomplete Mitigation and the Consequences*

Mitigation measures must be carefully designed and implemented. The following are actual examples of failures in healthcare facility emergency back-up systems:

- A hospital experienced a water pipe rupture into an electrical switching room, shorting the electrical circuits and automatically shutting down normal electrical power to the facility. Auxiliary power was immediately provided by the back-up generators. Unfortunately, the generated current routed through the same switching area and quickly short-circuited as well. The healthcare facility was without central electrical power until the leak and switching system was repaired.

- A hospital lost power following an earthquake. Its electrical generators immediately responded but were designed to be water-cooled. Since the local water supply system was also disrupted, the generators overheated and failed.

- A hospital lost power following a hurricane impact and was compelled to use generator power for several days. The hospital had no reserve generator and needed the constant power supply to maintain critical operations. The generators could therefore not be shut down for oil change and other required maintenance, and they failed after two days of operations.

* These are actual cases, with identifiers removed to maintain anonymity.

- The importance of balanced and comprehensive mitigation planning: A case study from the commercial sector provides an illustration of the importance that mitigation has assumed in some recently enlightened enterprises. The mitigation efforts of a *Fortune 500* company, directly and physically impacted by the 9/11 attack on the World Trade Center, is provided in Textbox 1.4.1.6 as an example of business mitigation planning to reduce the risk of losing key personnel as well as stored information, and so decreasing company vulnerability to a resultant catastrophic effect on business service delivery.

Lack of attention to mitigation can have serious consequences for the healthcare system. These are often most critical with utility disruptions and inadequate back-up systems.

Textbox 1.4.1.6

Business Mitigation Planning: An Example*

In the two decades prior to Y2K, business continuity responsibility in this company resided in the IT or other support divisions. In preparations for Y2K, business continuity responsibility was centralized under the direction of the major business lines and executive level managers. Overall business continuity governance was elevated to the Board of Directors level. The strategic goal of maintaining continuous and uninterrupted service in critical business areas was established and communicated, with the visible and tangible support from the very highest level of the company. To support this strategic goal, the following mitigation activities were planned and implemented:

- Enterprise technology infrastructure was consolidated, simplified, and moved away from work centers.
- Data, information, and record backup policies and capabilities were updated as new technology afforded additional opportunities.
- Remote work (working from home or technology centers) options were investigated and implemented consistent with work requirements.
- Non-individual work areas such as cafeterias, conference rooms, and training centers were retrofitted for rapid transition to work spaces for displaced employees.
- The company's real estate portfolio and technology centers were increasingly diversified to reduce the risk associated with the disaster impact on a single site.
- Particularly in the post 9/11 environment, physical, cyber, and personnel security programs were reviewed and revised to reflect the terrorist threat.
- Plans to occupy a high rise building in New York City were abandoned and replaced by a physical move to an outlying county.

* The identity of the company is withheld and descriptions have been made generic to maintain anonymity.

The financial burden of well developed mitigation activities is often offset by the beneficial impact on day-to-day organizational operations (i.e. through streamlining of these processes).

The textbox list of mitigation activities is not complete and is not fully applicable to a healthcare system, which does not have the option of multiple locations and a dispersed workforce during response and recovery operations. What is important is the process of applying the results of the HVA to identify, analyze, prioritize, plan, and implement mitigation actions supporting the organizational mission and objectives.

- Mitigation costs: Mitigation requires funding, but in many cases, these efforts provide additional value by streamlining day-to-day operations and reducing normal risk and cost over time (as reflected in the above example).

- The mitigation process: An organized approach to mitigation planning and a disciplined execution of the mitigation work plan is important to assure effectiveness and allow evaluation of the activities. This is addressed in Lesson 1.4.2.

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Lesson 1.4.2 Mitigation Planning and Documentation

Lesson Objectives:

- *Explain the organization of a mitigation plan.*
- *Discuss the important considerations in effective EM program governance of mitigation planning*.

Introduction

Mitigation planning encompasses all activities in the EM program, outside of emergency response, that are intended to prevent or decrease the likelihood of the hazard occurring and minimize or eliminate organizational impact from any hazard that cannot be prevented.

Formal documentation of mitigation plans is not a common activity in healthcare systems. By examining the format of mitigation plans produced in other disciplines, the advantage of this process is self-evident.

Formal mitigation plans in healthcare systems are not common, and no standardized format is widely disseminated. This lesson draws upon knowledge and experience from non-healthcare disciplines to present considerations for developing and accomplishing a mitigation work plan.

Mitigation Planning

The mitigation plan is essentially a documentation of the emergency management committee's intentions as it prioritizes vulnerability concerns and opportunities, delineates mitigation strategies, and defines an annual plan of action.

Using the information developed by the HVA, the mitigation plan commonly describes the significant hazards for the organization. They may best be grouped according to hazard categories, with common hazards listed as they have been in the HVA:

- Natural: floods, hurricanes, tornadoes, severe snow/ice storms, droughts, infectious disease outbreaks, and others.

- Technological: hazardous materials release, transportation mishaps, gas pipeline incidents, power failures, resource shortages, water contamination/shortages, and others.

- Intentional: civil disobedience, criminal disturbances, terrorism, and others.

The initial mitigation plan development process may start with:

Mitigation plans should include stated goals and objectives.

In addition, mitigation plans should include both long and short-term strategies as well as cost-benefit strategies.

- Assessing current initiatives: Cataloging and reviewing relevant activities already underway across the organization to address safety, prevention, business continuity, and other vulnerability reduction initiatives. This prevents duplication of effort or conflicting activities within the organization.

- Assessing recent initiatives: Secondly, the process should involve an examination of the mitigation activities accomplished in the prior year's mitigation work plan.

- Defining goals, objectives and strategies: The mitigation plan's goals describe the desired end-state for mitigation at the completion of the work plan time period. The objectives delineate the interim steps for reaching the goals. The EM committee should also define the strategy it uses for selecting vulnerability interventions for that plan period; strategy considerations may include:

  - Overall strategy: The overall mitigation strategy is to determine actions and initiatives (using the HVA) that have **the most significant potential** to reduce or eliminate the likelihood of hazard occurrence and to reduce or eliminate the vulnerability of the response organization and possibly the general public.

  - Defining both short- and long-term mitigation strategies: Many mitigation actions may take longer than a single annual work plan to accomplish; others may be planned but accomplishing them must wait, with some of the more expensive interventions depending upon funding, capital improvements, new facility planning, and other opportunities that make the intervention more feasible.

  - Cost-benefit strategy: A general cost-benefit ratio for each potential mitigation action or initiative is approximated, and they are compared to determine relative priorities. Some vulnerability elements are similar enough across multiple hazards that they can be addressed through a single mitigation or preparedness intervention, and the risk/benefit profile for that intervention (including costs, positive or negative effects on usual operations, and other factors) should be judged accordingly.

  - Integration with non-EM safety initiatives: A critical component of any organization's mitigation planning is a process to fully evaluate, standardize (to the extent indicated), and update the everyday safety plans with the internal Occupant Emergency Procedures for each physical location within the healthcare system. The mitigation plan should develop and provide templates and process guidance for its operating units to improve their individual safety plans and procedures. An annual review and update of this area of focus is considered an important mitigation activity.

- Grouping of EM program mitigation actions: Because of cost and other considerations, mitigation measures are often grouped as "structural" and "non-structural."[259]

Textbox 1.4.2.1

Structural Versus Non-structural Mitigation
A Security Example

Structural mitigation to address security vulnerabilities may include reconstruction of entry paths into the healthcare facility, thereby limiting the number of unlocked entrances and allowing better control of the perimeter.

A non-structural security mitigation measure may be the institution of a screening and badging system for staff, vendors, patients, and visitors.

Both reduce vulnerability to theft and other intentional hazards.

A useful way to categorize mitigation activities is "structural" and "non-structural."

- Other areas to be addressed by the mitigation work plan: Examples of additional mitigation planning activities to be considered for inclusion in a comprehensive work plan include:
    - Defensive protection measures: Ongoing cooperative efforts with law enforcement, intelligence, and security services to decrease the vulnerability to terrorism and other criminal acts. Checkpoints, screening procedures and other "defensive" anti-terrorism measures fall within emergency management, and are distinguished from the "offensive" counter-terrorism measures such as infiltration and interdiction.
    - Sustaining resiliency in the workforce: Development and annual review of standard mitigation guidance for individual and family preparedness plans for healthcare system personnel (see Lesson 1.5.4). This may decrease the vulnerability of personnel leaving (or

[259] Drabek TE, Hoetmer GJ (ed). *Emergency Management: Principles and Practice for Local Government.* International City Management Association (1991); Washington D.C., p. 142.

There are different approaches to the mitigation planning process. Examples are provided in the text. These have been adapted to provide a recommended template.

losing focus) during a crisis or emergency that could also be impacting their home situation.

- Coordinating with community for mitigation purposes: Addressing mitigation activities jointly with nearby manufacturing plants, fuel storage facilities, correctional facilities, waste disposal facilities, and other organizations that present unusual hazards, to ensure compatibility of emergency plans and procedures (particularly communications), may reduce risk for the healthcare organization. This is especially important when an acknowledged hazard at a nearby location could spread offsite.

Mitigation Work Plan – Guidance and Format Options

As noted at the beginning of this lesson, there is no widely agreed upon and accepted format for an organization's mitigation work plan.

- FEMA guidance: FEMA provides several guidance documents for mitigation planning:
  - *FEMA How-To-Guide #3, Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies*:[260] This guide presents a general process for developing a mitigation strategy and documenting the planning process which translates into their recommended outline for a mitigation plan.
  - *FEMA Mitigation Planning Guidance for Manmade Hazards*[261] presents the following scheme in its "Step 4 *Document the Mitigation Planning Process*":
    - A summary of the planning process, including the sequence of actions taken and a list of the team members and stakeholders who participated;
    - The results of the risk assessment and loss estimation;
    - Mitigation goals and objectives aimed at reducing or avoiding the effects of manmade hazards;
    - Mitigation actions that will help the community or State accomplish the established goals and objectives; and
    - Implementation strategies that detail how the mitigation actions will be implemented and administered.

[260] FEMA. *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies* (2003). Mitigation Planning How-To Guide # 3 (FEMA 386-3) accessed January 4, 2010 at: http://www.fema.gov/library/viewRecord.do?id=1886
[261] FEMA. *State and Local Mitigation Planning How-To Guide: Integrating Manmade Hazards* (2003) Version 2.0. Phase 3; Federal Emergency Management Agency, Washington, DC.

- NFPA guidance: NFPA 1600 (2007 edition) also provides some guidance on mitigation activities.

The authors adapted the FEMA mitigation planning process and present the following stepped approach as a candidate mitigation work plan template:

A. Develop a single all-hazards mitigation plan:

Step 1: Develop mitigation goals and objectives and define the selected mitigation strategies.

Step 2: Identify and prioritize mitigation actions consistent with goals, objectives, and strategies established in Step 1.

Step 3: Prepare an implementation strategy.

Step 4: Document the mitigation planning process.

B. Implement the plan and monitor/document progress.

From these steps the authors propose the following generic mitigation work plan template:

A recommended mitigation plan format is proposed.

I. Introduction (this section will change little through successive work plans)
  - Statement of leadership support for the mitigation planning process and the resulting work plan.
  - Explanation of mitigation and its relationship to the EM program.
  - High-level explanation of the mitigation planning process.

II. Mitigation plan goals, objectives and assumptions
  - Statement of mitigation goals and supporting objectives.
  - Description of metrics to monitor the progress towards goals and objectives.
  - Statement of planning assumptions.

III. Documentation of the mitigation planning process
  - Identification of personnel and organizations involved in the planning process.
  - Summary of the Hazard Vulnerability Analysis (HVA) findings to be considered for the mitigation plan (full detailed HVA is an appendix).
  - Summary of the general strategies (cost/benefit and others) used in selecting and assigning priority to mitigation actions.

- Description of the decision-making process for selecting and prioritizing mitigation activities for the plan period, including details on activities that depart from the HVA results, as indicated. For example, a capital improvement project that presents a cost-effective opportunity to address a relatively low-priority mitigation issue could be explained.

IV. Planned mitigation activities
- Summary of the mitigation accomplishments and outstanding issues (such as ongoing long-term projects) from the preceding mitigation plan
- Identification of short-term (one-year) mitigation activities – these may be divided into structural and non-structural activities (see earlier explanation).
- Identification of new long-term (greater than one year) mitigation activities.
- Description of significant changes to existing long-term mitigation activities (as appropriate). For example, change in the schedule of implementing a specific structural mitigation measure.

V. Implementation strategy
- Description of the implementation strategy and tactics for the short-term mitigation activities.
- Description of the implementation strategy and tactics for the long-term mitigation activities.
- Identification of sources of funding to accomplish short- and long-term mitigation activities.

VI. Plan maintenance
- Description of the plan maintenance process and timetable.
- Description of any evaluation process for assessing and modifying the mitigation work plan.
- Description of individual's and group's responsibilities for work plan maintenance.

VII. Appendices
- The detailed HVA findings.
- Additional information supporting the mitigation plan.

Other Mitigation Guidance: A VHA Example

The VHA provides mitigation guidance to its medical centers by incorporating mitigation guidance into its Standard Operation Procedures (SOPs) that function as pre-plans in their EOP Incident Annexes. Earthquake Hazard mitigation guidance is provided below as an example, adapted from the *VHA Emergency Management Program Guidebook, 2009*.

Hazard – Earthquake

Hazard reduction/preparedness strategies and resource issues.

- Mitigation. [The term secure means to anchor or brace in accordance with applicable VA, American Institute of Architects (AIA), State, municipal, National Fire Protection Association (NFPA), or other directives and best practice engineering specifications or recommendations.]

    - Secure all major power conditioners, uninterruptible power supplies, and battery banks in Information Management Systems and telephone rooms.

    - Secure all electrical generator sets and associated battery systems, fuel systems, and control panels.

    - Secure all shelves, furniture, file cabinets, tool racks, and the like firmly to wall studs.

    - Secure water heaters by strapping to wall studs or on stands bolted to floor.

    - Secure direct exchange, fan coils, and window A/C units.

    - Secure all major building service equipment, such as:
        - Chillers and air handling units.
        - Medical vacuum and air sources.
        - Bulk oxygen storage tank and manifold.
        - Sub-stations, transformers, switchgear, power conditioners.
        - Fire suppression systems.
        - Boilers.
        - Water tanks.
        - Nutrition and Food Service systems (e.g., tray lines, freezers, dishwashers).

    - Secure all bulk or portable gas storage tanks (e.g., propane,

The VHA, as an element of its mitigation efforts, develops procedures to address specific hazards. An example is provided.

acetylene, carbon dioxide, nitrogen, nitrous oxide, and oxygen).

- Hang heavy items such as artwork, displays, bulletin boards, calendar boards away from where people may sit, such as in a waiting room.

- Brace all overhead light fixtures properly (see NFPA guidelines); brace all electrical conduit, pneumatic, and water lines in accordance with NFPA or other applicable standards.

- Anchor or brace indoor or outdoor fuel tanks.

- Anchor all fixed medical equipment, including:
  - Diagnostic and therapeutic radiographic equipment.
  - Nuclear Medicine.
  - Research.
  - Laboratory.
  - Dialysis (e.g., water purification system).
  - Pulmonary (e.g., barometric chamber).
  - Physical therapy.
  - Urology.

- Ensure electrical and gas distribution systems are maintained in good repair to minimize fire and explosion risks.

- Ensure fire suppression systems are maintained in good condition.

- Ensure potable, irrigation, and chilled water distribution systems are maintained in good repair to minimize flooding.

- Ensure adequate drainage capability for rooms at ground level or below which house patient records.

- Store flammable materials in closed, rated cabinets with latches to minimize explosion risk and damage.

- Store hazardous and radioactive materials securely with proper containment to minimize damage from spills and leaks.

- Store breakable items such as glassware in closed cabinets with latches and secure items in display cases with “earthquake putty.”

- Place large or heavy objects on lower shelves whenever possible.

- Repair deep or structural cracks in ceilings or foundations.
- Install earthquake shutoff valves for water, gas, and steam distribution systems.

Mitigation Plan - Governance and Administration

The healthcare system emergency program manager, under authority delegated by the organizational leadership, oversees mitigation planning. The EM committee should be directly related to the healthcare system Safety Committee (or environment of care committee). If it is not, the EM committee should closely coordinate with that entity in all mitigation planning.

The emergency program manager and EM committee are responsible for completing the annual mitigation work plan, and establishing a course of actions to accomplish its goals and objectives. The emergency program manager informs the organization's executives of areas where new or revised codes, regulations, and operating procedures may provide significant mitigation for a particular hazard.

The mitigation plan is ultimately the responsibility of the healthcare system administration. This is often delegated to the Emergency Program Manager and the EM committee. Specific capital expenditure requests are referred back to system administration.

Mitigation measures identified in the plan that exceed defined cost or business impact thresholds should be presented to senior system executives and board of directors (as applicable) with justifications for their consideration. In turn, these senior levels should provide policy direction for the EM committee. They should understand and consider the findings of the HVA in providing direction for the mitigation and other EM program work plans. Senior-level involvement in this activity may promote greater organizational compliance with the mitigation work plan. In a multi-facility healthcare organization, the mitigation plan is extended to each location, with personnel at each facility implementing the plan with individual applications customized to their specific location.

The emergency program manager coordinates with other healthcare organizations and the appropriate agencies to accomplish the planned mitigation measures that extend beyond the organization.

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Module 1.5

Preparedness Planning for Healthcare Systems

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Lesson 1.5.1 Overview: Preparedness in Healthcare Emergency Management

Lesson objectives

- *List major strategies for enhancing preparedness planning.*
- *Define the major categories of preparedness activities that support an effective response capacity and capability.*
- *List the different categories of preparedness resource management and the general activities in each category.*
- *Define how an annual preparedness work plan is administered and list proposed elements that should be included.*

Introduction

Preparedness planning in an EM program encompasses all activities that, in advance of any hazard impact or imminent threat, build organizational resiliency and/or organizational capacity and capabilities for response to and recovery from disasters and emergencies. The NIMS definition (see terminology textbox) stresses a focus on “effective coordination” and provides a list of preparedness elements.

Preparedness encompasses all activities that establish emergency response and recovery capabilities and capacity.

Terminology alert!

Preparedness: A continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response. Within the National Incident Management System, preparedness focuses on the following elements: planning; procedures and protocols; training and exercises; personnel qualification and certification; and equipment certification.[262]

Some **preparedness activities are broadly defined and relate primarily to the overall EM program, addressing leadership and direction.** These programmatic initiatives, such as establishing relationships with community response agencies and promoting the EM program within the healthcare organization, were presented in Module 1.2. This lesson discusses initiatives that are more specifically focused

[262] United States Department of Homeland Security. *National Incident Management System*. (2008) *Glossary*; accessed February 15, 2010 at: http://www.fema.gov/emergency/nims/

upon preparedness for emergency response and recovery. General strategies for managing healthcare system preparedness are presented, and an effective organization of preparedness activities is then described.

Preparedness Strategies for Healthcare Systems

The overarching preparedness initiative may be facilitated by the use of consistent management strategies presented earlier in this text.

- Preparedness and the four major response and recovery capabilities: As discussed in Module 1.1, preparedness planning and plan implementation must address all four of the healthcare emergency response and recovery major capability categories:
    - Protection and security
    - Continuity of operations
    - Health and medical surge
    - Support to external requirements

- Preparedness planning and "management by objectives": Preparedness planning should be guided by the use of clear, measurable goals and objectives as noted in the earlier discussion on management techniques. The planning activities may be organized by establishing a multi-year preparedness plan with annual work increments (also called an annual work plan). This planning is based upon the HVA, the results of annual emergency management program reviews, and response and recovery evaluations from exercises and actual incident experience.

- The HVA and preparedness: As with mitigation planning, the HVA provides a basis for what needs to be addressed (see Module 1.3).

    - Knowledge: The importance of the HVA to preparedness is cogently summarized by Perry and Lindell: "The first guideline for preparedness planning is that it should be based upon accurate knowledge of the threat and of likely human response. Accurate knowledge of the threat comes from thorough hazard assessment and vulnerability analysis."[263]

    - Priorities: Preparedness planning should clearly reflect the priority hazards and hazard vulnerabilities determined in the HVA.

- Inter-relationship of preparedness and mitigation: Much of

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[263] Perry R.W., Lindell M.K. *Preparedness for Emergency Response: Guidelines for the Emergency Planning Process.* Disasters (2003), 27(4), pp. 336-350.

preparedness in healthcare systems has traditionally focused upon developing medical surge capacity and capability. **Even more importantly, preparedness must address the capabilities to:**

- **Keep personnel, patients and visitors safe**
- **Protect, maintain and recover mission critical functions and systems during and immediately after hazard impact, and**
- **Continue to operate despite compromised mission-critical systems.**

These capabilities are more commonly thought of as being related to mitigation activities. For these capabilities to be fully realized, however, preparedness should also focus in this area. Preparedness activities therefore include effective training and exercising of functions established through mitigation. Examples include training on and exercising the emergency warning system, and exercising the activation of a back-up water supply system that prevents loss of water pressure in the facility.

As has been discussed throughout this text, preparedness activities for healthcare systems should focus on organizational resiliency as well as medical surge.

- Preparedness planning and NIMS: The NIMS document includes a major focus on preparedness, and defines the term "preparedness organization" (see terminology textbox) to emphasize this activity. Much of the material in this text related to preparedness is derived from NIMS and other ICS documents.

Terminology alert!

Preparedness Organizations: An organization that provides coordination for emergency management and incident response activities before a potential incident. These organizations range from groups of individuals to small committees to large standing organizations that represent a wide variety of committees, planning groups, and other organizations (e.g., Citizen Corps, Local Emergency Planning Committees, Critical Infrastructure Sector Coordinating Councils). (NIMS 2008)[264] This entity contrasts with a "response organization" (see "Response Organization" in glossary) or an "ICS organization."[265]

- Relationship between "preparedness" and "response and recovery":

[264] United States Department of Homeland Security. *National Incident Management System. (2008).* Washington, DC. p. 145; accessed December 22, 2009 at: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

[265] "ICS Organization" is the term used in NIMS for a response organization; see Ibid, Appendix B, Tab 1, page 91.

Preparedness should not be done for "preparedness sake," but to establish optimal emergency response and recovery. An accurate understanding of **effective response** must therefore be incorporated into preparedness planning. For example, the development of emergency response and recovery competencies for the VHA focuses upon describing knowledge, skills, and abilities within an accurate emergency context. Training based upon competencies with this orientation is then more likely to convey skills applicable in the emergency setting.

Preparedness planning should define and fully establish the organization's incident management team

Similarly, the "response organization" that the healthcare organization uses to manage the emergency response must be clearly defined, implemented, trained and exercised. **While personnel do not know what the next emergency will be, all key personnel should fully understand how the organization's incident management team, as the nexus of the "response organization," will be notified, assembled, and function to make decisions and initiate emergency actions.**

Preparedness planning activities can be subdivided for convenience.

- <u>Preparedness planning categories</u>: Preparedness activities within the EM program that are specific to emergency response and recovery may be grouped within four categories based upon their similarities in focus:
  1. Emergency operations plan document, both preparation and maintenance
  2. Preparedness resource management
  3. Exercise & other evaluation
  4. Organizational Learning.

  Each category is summarized below and further discussed in succeeding lessons.

- <u>Emergency Operations Plan (EOP) documents</u>: An Emergency Operations Plan (EOP) is the document that explains how an organization will manage and coordinate its response and recovery to all hazards. It is viewed as guidance for best practice rather than as a rigid procedure manual. The EOP documentation activity addresses developing, writing, and revising/refining the EOP instruments that guide emergency response and recovery. It extends to all components, from the EOP base plan and functional annexes to **service-level planning** and includes the specific tools used during response (resource lists, operational checklists, notifications lists, ICS forms and other job aids). It also includes developing incident specific annexes (pre-plans or operational guidance for specific hazards). All of these instruments incorporate emergency response and recovery planning considerations that are primarily focused upon the four response capabilities for healthcare organizations.

- Preparedness resource management (i.e., resource planning outside of response and recovery): Resources (see terminology textbox) include personnel, facilities, equipment and supplies necessary for the functions of the emergency response and recovery plans. Resource management during emergency response and recovery is covered in the EOP. The resource management definition in NIMS (see terminology textbox for NIMS explanation) **covers both preparedness and response**. From an EM program perspective, it is helpful to separate preparedness from response activities and that is the approach utilized in this text. Preparedness resource management is supervised by the EMC and emergency manager and appropriate service level personnel.

Terminology alert!

Resources: Personnel and major items of equipment, supplies, and facilities available or potentially available for assignment to incident operations and for which status is maintained. Resources are described by kind and type and may be used in operational support or supervisory capacities at an incident or at an Emergency Operations Center.[266]

Terminology alert!

Resource Management: A system for identifying available resources at all jurisdictional levels to enable timely, efficient, and unimpeded access to resources needed to prepare for, respond to, or recover from an incident. Resource management under the *National Incident Management System* includes mutual aid agreements and assistance agreements; the use of special Federal, State, tribal, and local teams; and resource mobilization protocols.[267]

[266] United States Department of Homeland Security. *National Incident Management System*. (2008). Washington, DC. p. 146. Accessed December 22, 2009at: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

[267] United States Department of Homeland Security. *National Incident Management System.* (2008). Washington, DC.; accessed December 22, 2009 at: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

Preparedness resource management includes equipment/supplies, facilities, and personnel.

Equipment/Supplies Resources

Important concepts include the following.

- Resource cache: All activities related to identifying, typing, and acquiring resources, assembling, storing and/or maintaining resources in a readily available state for mobilization. It also addresses the planning for rehabilitation and return to readiness after use.

- "Just-in-time" resources: The development of methods for acquiring resources in a "just-in-time" manner during mobilization and incident response. This may include:

    - Mutual aid (between like organizations, see terminology textbox);
    - Mutual support (between unlike organizations);
    - Cooperative agreements (with payment for resources);
    - Contingency contracts (with suppliers); and
    - Volunteer recruitment and processing necessary to augment the capabilities and capacity of the organization's response and recovery resources.

- Process and procedure for incident resource management: Establishing the processes necessary for resource management *during* emergency response and recovery. This covers mobilization, incident operations, demobilization, and return to readiness. These processes are then documented and appropriately integrated into the Emergency Operations Plan (as noted above).

Terminology alert!

Mutual Aid: Voluntary aid and assistance by the provision of services and facilities, including but not limited to: fire, police, medical and health, communications, transportation, and utilities. Mutual aid is intended to provide adequate resources, facilities, and other support to jurisdictions whenever their own resources prove to be inadequate to cope with a given situation. *(SEMS)*[268] Some authorities differentiate "mutual aid" from "cooperative assistance," where the assisting resources are compensated for their response costs. Other authorities designate this as "compensated mutual aid."

Personnel resources

Personnel resource management is possibly the most complex area of emergency preparedness. It includes the following:

- Recruitment & Retention: Most personnel within the healthcare organization will continue in their usual capacities during most emergencies, with only minor alterations in their roles and responsibilities. Others will have unusual tasks but will be guided through direct supervision. Still others, particularly those within the upper level positions of the organization's Incident Management Team and those on specialized assignments like patient decontamination, will have roles that differ markedly from their usual jobs. Personnel with the indicated pre-qualifications should be recruited to be available for those positions. Attention must also be paid to retention of these personnel, through training and exercise that maintains interest, through recognition of their commitment and through other methods to reward excellence in the assigned roles.

- Emergency response and recovery competencies, education and training: The additional, emergency-related tasks within the EOP that must be performed by designated personnel commonly require qualifications beyond their usual job positions. As presented in Lesson 1.1.3, competencies are developed that describe the knowledge, skills

[268] *Standardized Emergency Management System (SEMS)* Guidelines; Part I. System Description (Draft 12/23/94), pp. 8-9; accessed December 22, 2009 at: http://www.oes.ca.gov/Operational/OESHome.nsf/PDF/SEMS%202006%20Guidelines/$file/2006-SEMSGdlins-Part1A.pdf

and abilities necessary to effectively perform in each designated position, with special focus on emergency response. These are used in recruitment of qualified personnel as well as to design, develop, conduct and evaluate education and training programs related to emergency response and recovery. **Maintenance of this knowledge and skills must also be addressed so that personnel sustain a constant state of readiness**.

- <u>Personal and family preparedness</u>: A final element of personnel resource management that is critical to the organization's success is promoting and guiding effective personal and family preparedness for its personnel. This is addressed in more detail at the end of this Unit.

Facility resources

- <u>Identification of sites</u>: The usual settings for healthcare service management, delivery, or support are also used during most emergencies. "Facility emergency resources" are those sites that are used in some element of emergency response and require capabilities not common in everyday healthcare operations (see textbox 1.5.1.1 for examples). Some of these facility resources, such as the organization's site for managing its overall response (variably called an incident command post, emergency operations center, or hospital command center), are specific to emergency response and commonly used for any type of emergency. Others, such as a contaminated patient reception and decontamination area, are used infrequently but still must be rapidly available. Alternate care sites, volunteer reception and processing areas, and ambulance staging (for mass evacuation) are other examples of facilities that may be important to an organization's emergency response. Appropriate locations for each should be identified and evaluated for effective performance.

Textbox 1.5.1.1

Healthcare System Facility Resources: Examples

- Patient Reception and Triage Area
- Patient Decontamination Area
- Incident Command Post or Facility Emergency Operations Center
- Alternate Care Sites
- Volunteer Processing Area
- Evacuation Staging Areas
- Shelter in Place Areas
- Vehicle Staging Areas

- Development of facility resources: Each facility resource must have the equipment and supplies ready for the facility to function as intended during an emergency.

- Operation of the facility resources during emergencies: Each facility should have guidance developed that delineates the facility set-up for its emergency function and provides clear guidance for mobilization, maintenance during response, demobilization and any unusual return-to readiness requirements.

- Exercise & other evaluation: These are formal and informal activities that develop a basis for judgment and decision making regarding plans, programs, or policies. Evaluation activities may have a direct focus on the EM program itself through a programmatic evaluation, as well as evaluation of individual EM component plans (e.g., EOP, Strategic Administrative Plan, work plans, etc.). Evaluation focusing on the EOP and recovery planning may be accomplished through exercise and the After Action Report process.

  Exercise is a scenario-driven activity that provides performance evaluation methods outside of actual incidents. Exercises may be table top (i.e., primarily discussion of possible actions), functional (i.e., testing a specific element in relative isolation from other elements of the EOP) or full-scale exercises that evaluates a wide range of emergency performance within the organization and between the organization and other elements of the emergency response community. The After Action Report process captures the objective performance findings and provides a basis for organizational learning, which includes corrective actions.

- Organizational learning: These related activities identify, capture, and disseminate relevant information to incorporate change and permanent improvement ("learning") into the plans and response/recovery systems.

Exercise, other evaluation and organizational learning are each extensively addressed in Unit 4.

The Preparedness Work Plan

Like mitigation planning, preparedness planning includes several categories of activities. These should be outlined in a preparedness work plan that is reviewed and revised at least annually.

Planned preparedness activities are codified into an annual EM program "preparedness work plan." As with mitigation planning, preparedness work plans are developed in an iterative fashion, commonly in a yearly cycle. Also similar to mitigation planning, they should outline measurable, attainable objectives and strategic direction to demonstrate the inter-relationship of these otherwise disparate activities.

The work plan should present the HVA basis (i.e., justification) for the selected activities. Author recommended categories for the projected activities to be conducted in the preparedness planning include:

- The emergency preparedness process: Revisions to the structure, composition, or procedures of the emergency management committee. Examples include revising subcommittees or meeting schedules. Much of this may be covered by the Strategic Administrative Plan presented in Module 1.2.

- "External" preparedness initiatives and their planned endpoints for the planning period: Participation in local or regional committees, conferences, regional response plan, and so on is described.

- Plan documentation: The initial development and/or revision of the EOP and its components.

- Resource management (facilities): Development of healthcare system emergency response facilities or resources for use in response or recovery, such as a decontamination area or a media briefing area.

- Resource management (equipment and supplies): Equipment and supplies acquisition, storage, and maintenance (e.g., rotation of stored pharmaceuticals to prevent expiration).

- Resource management (personnel): Recruitment and retention, competency development for EOP positions based upon position descriptions and concept of operations, training and educational activities.

- Exercises and other evaluation: Planned exercises and their objectives; other planned evaluation activities.

- Communication plans: Outreach to healthcare system personnel, community partners, patients and the public. It is particularly important to schedule regular updates and seek input from mid-level administration and key operating unit managers (department heads) when developing new/revised processes and procedures within the Emergency Operations Plan. Updates and changes as well as ongoing planning work should be regularly communicated to all stakeholders as part of the healthcare facility's preparedness efforts.

From these steps the authors propose the following generic preparedness plan template:

A candidate template for a preparedness plan is proposed.

I. Introduction
- ○ Statement of leadership support for the preparedness process and the resulting plan
- ○ Explanation of preparedness and its relationship to the EM program
- ○ Broad explanation of the preparedness planning process

II. Preparedness Plan goals, objectives, and assumptions
- ○ Statement of preparedness goals and supporting objectives
- ○ Statement of plan assumptions

III. Documentation of the preparedness planning process
- ○ Identification of personnel and organizations involved in the preparedness planning process
- ○ Summary of the Hazard Vulnerability Analysis (HVA) findings to be considered for the preparedness plan (the fully detailed HVA is an appendix with restricted distribution for security and proprietary reasons)
- ○ Cost/benefit information for consideration
- ○ Description of the strategy and decision-making process for selecting and prioritizing preparedness activities for the plan period, including details on activities that depart from the HVA results, as indicated. For example, a government-funded initiative for a training program that has been selected as a priority over previously scheduled healthcare system training.

IV. Planned preparedness activities
- ○ Summary of the preparedness accomplishments and outstanding issues from the preceding preparedness plan

- Identification of short-term (one year) preparedness activities
- Identification of long-term (greater than one year) preparedness activities
- Description of significant changes to ongoing long-term activities.
- The activities may be presented in the categories discussed earlier:
  - <u>EM committee leadership and direction</u>:
    - EM committee meetings/subcommittee activities (unless described elsewhere under the Strategic Administrative Plan)
    - Community Liaison: Community meetings and participation in community-wide preparedness initiatives
  - <u>Response and recovery plans documentation</u>: Healthcare System Emergency Operations Plan and recovery planning analysis and revisions
  - <u>Resource management planning</u>:
    - Facilities and equipment/supplies: Implementation or modification of these elements (re-design, acquisition, cache development, mobilization manuals, mutual aid instruments, and other)
    - Personnel: recruitment activities, instruction (consider a strategic education and training plan), instructional drills, retention activities such as recognition within the organization,
  - <u>Strategic exercise plan</u>
  - <u>Evaluation planning</u>: EOP assessment (from exercises, incidents, and EM committee analysis of the EOP), plus evaluation of recovery planning, training, and exercise efforts and others
  - <u>Organizational learning initiatives</u>

V. Implementation strategy

- Description of the implementation strategy and tactics for the short-term (i.e., plan length or shorter) preparedness activities (see Unit 4)
- Description of the implementation strategy and tactics for the long-term preparedness and maintenance activities
- Identification of sources of funding to accomplish short and long term preparedness activities

VI. Plan maintenance

- Description of the plan maintenance process and time table
- Description of the process for considering goal, objective and activity metrics to update the preparedness plan
- Description of individual's and group's responsibilities for plan maintenance

VII. Appendices
- The detailed HVA findings
- Additional information supporting the preparedness plan

Preparedness Work Plan - Governance and Administration

The organization's emergency program managers, under authority delegated by the senior administrators and the governing board (if one exists), oversees all preparedness activities at the level of the healthcare system.

The emergency program manager, with input and desired consensus from the EM committee and approval by senior administration, establishes and maintains the annual preparedness work plan. This ideally entails establishing a budget for the work plan actions that is approved by administration. Though not necessarily expensive, formal consideration should be given to financially supporting the personnel time and effort devoted to these EM program duties.

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Lesson 1.5.2 Emergency Operations Plan Documentation: Overview

Lesson objectives

- *Define how an Emergency Operations Plan (EOP) should be utilized by a healthcare organization.*
- *List two major resources that can be utilized in formatting an EOP.*
- *List and define the major elements of a healthcare organization EOP as proposed in this lesson.*
- *Define the difference between preparedness and response assumptions and how the latter may be utilized during response.*
- *List key concepts related to development, implementation, and maintenance of the healthcare organization EOP.*
- *List the major advantages and disadvantages of the two major methods for providing access to a healthcare organization EOP.*

Introduction

One of the most important components of preparedness planning is the development and maintenance of the organization's Emergency Operations Plan or EOP.

As defined in Lesson 1.1.2, the Emergency Operations Plan (EOP) provides the structure and the processes that an organization uses for response to and initial recovery from any event that could severely challenge or exceed the normal healthcare system management and/or operations. Importantly, the EOP provides the guidance and processes that support the development of incident action planning for the organization, and so it is directly related to the effectiveness of how the organization manages its emergency response and recovery.

The EOP memorializes the organization's understanding of how it will manage and conduct actions under emergency conditions. It may be viewed by some as essentially creating policy in this area, and so needs to be carefully developed, tested, and signed off by senior authorities within the organization.

The central focus of the EOP is to provide guidance for the four major emergency response and recovery capabilities required of any healthcare organization:

- Protection and security (i.e., occupant emergency procedures).
- Continuity of operations (i.e., organization resiliency).
- Medical surge ((both capacities and capabilities).
- Support to external requirements (i.e., outside commitments).

Critical guidance that the EOP should provide includes:

- Structure and processes for the management of the healthcare system during emergency response and initial recovery

- Processes for the interaction of the different emergency response components within the healthcare organization and for healthcare system interaction with outside resources

- Time sensitive, initial (“reactive”) response actions, which are usually represented in the EOP in the format of operational checklists (often referred to as job action sheets) and other job aids

- Methodology for managing the ongoing response, facilitated through processes such as incident action planning and through the use of ICS-based forms in the EOP (see below and Unit 3).

Because of its importance, a significant portion of EM program preparedness activities is focused on the development, implementation, and maintenance of the EOP and its components: annexes, appendices, operational checklists (for example, job action sheets and mobilization guides). ***By approaching all of this guidance as components of a single overall response and recovery guidance document, consistency of content, format, and usefulness may be effectively addressed***.

The EOP: Format and Content

When considering all the documentation involved in a comprehensive EOP guidance, it is evident that this creates a formidable document in both length and complexity. It is important to recognize, however, that **the EOP serves also as an instructional and system implementation tool.** The EOP, by presenting the response system in detail, serves as the primary reference material for establishing and/or maintaining all emergency response capabilities. These include personnel recruitment, instructional activities, resource management and other development activity. The EOP also provides the basis for exercise, evaluation, and organizational learning as presented in Unit 4.

Though the EOP is intended to guide response and recovery actions, it is also central to most preparedness, evaluation, and improvement.

Its size and complexity in fact precludes much of the EOP from being a primary tool during emergency response and recovery. **EOP guidance intended to be directly used during response (e.g., operating procedures and pre-plans in the incident specific annexes) should be abbreviated guidance instruments and quick reference materials.** The actual format of these sections, therefore, has critical operational importance, ensuring the ability to efficiently use the guidance under the hectic conditions of emergency response and recovery: The overall EOP, however, is also organized so that it can be referred to efficiently if questions arise during response and recovery as well as preparedness.

Many templates to guide the construction of an EOP have been published. Most are not rigidly prescriptive in suggesting the documents design, but suggest approaches that may be helpful to response organizations. Prominent examples include:

- FEMA's *"Comprehensive Preparedness Guide 101: A Guide for All-Hazard Emergency Operations Planning"*[269]: Also called "CPG 101," the guide presents multiple considerations that are relevant to healthcare organizations, even though it is written for local and State governments. Some of the important considerations from CPG 101 and other sources include:

  - Organization and maintenance of the EOP: The EOP document should be constructed to promote efficient use of relevant EOP guidance during response. It should also promote efficiency in maintaining the document. For example, it should be organized so that improvements can be conducted in a simple fashion without revising the entire document.

  - All-hazards: By addressing core functions, the EOP may be used for many situations, including unanticipated ones. Incident or hazard-specific issues identified through the HVA process are addressed with more specific annexes.

  - Structure and function of response processes and procedures: The EOP should contain not only how the healthcare system will organize its resources for response (a systems description), but also the necessary processes and procedures for the various stages of the incident (concept of operations).

  - Progressive levels of specificity: Since the EOP will be used by different persons with different responsibilities and will be used during both preparedness (during implementation) and response, there is a range of specificity contained in the various portions of the document. For example, certain sections of the document may contain overview and contextual material but other sections should be explicit, describing positions and their specific tasks. The specificity progresses from Base Plan to annexes, then appendices and attachments.

  - Compatibility: The EOP should conform to generally accepted terminology and structure to optimally support integration with

Different response plan formats can be examined by the healthcare system as it establishes its EOP. None are prescriptive in their structure.

[269] FEMA. *Comprehensive Preparedness Guide 101: A Guide for All-Hazard Emergency Operations Planning*, accessed January 30, 2010 at http://www.fema.gov/about/divisions/cpg.shtm

external organizations in the community response planning.

- Accountability: For healthcare systems, the EOP format should permit relative ease in demonstrating crosswalks between EOP response guidance and the regulatory, statutory, accreditation, and grant funding requirements for the healthcare organization. This critical point is often missed and as a result, organizations are influenced into writing an EOP that meets regulatory requirements but is difficult to use. By flipping priorities, emergency managers can demonstrate accountability for meeting standards (e.g., through an accompanying crosswalk between the standards and the EOP), while creating a more tenable EOP.

- The National Response Plan (NRP) as a template: After 9/11, Homeland Security Presidential Directive (HSPD)-5 mandated the creation of a consolidated National Response Plan (NRP) to replace the Federal Response Plan (FRP) and other incident specific Federal plans.[270] In response to the failures of Hurricane Katrina, the U.S. Department of Homeland Security replaced the National Response Plan with the National Response Framework (NRF) in 2008.[271] Although superseded by the National Response Framework (NRF) in 2008, the NRP represents a composite of the evolution of response plan templates over multiple decades in the U.S. It therefore provides a useful template to consider in structuring an individual organization's or healthcare system's EOP. The format of the National Response Plan is provided in Exhibit 1.5.2.1.

- An example EOP template for healthcare systems: Using CPG 101 and the National Response Plan and National Response Framework as models, this educational text proposes the following EOP template (see Exhibit 1.5.2.2 and Textbox 1.5.2.1). Just as other guidance in this text is not prescriptive, this template is not intended as a mandate. Variation among healthcare systems' EOP documentation is expected based upon history and tradition, organizational structure and other circumstance unique to individual healthcare organizations.

[270]Department of Homeland Security. *National Response Plan*, 2004; accessed April 30, 2006 at: http://www.dhs.gov/interweb/assetlibrary/NRPbaseplan.pdf

[271] United States Department of Homeland Security. *National Response Framework (January 2008)*; accessed December 26, 2009 at *http://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf*

Exhibit 1.5.2.1 Organization of the National Response Plan (NRP)

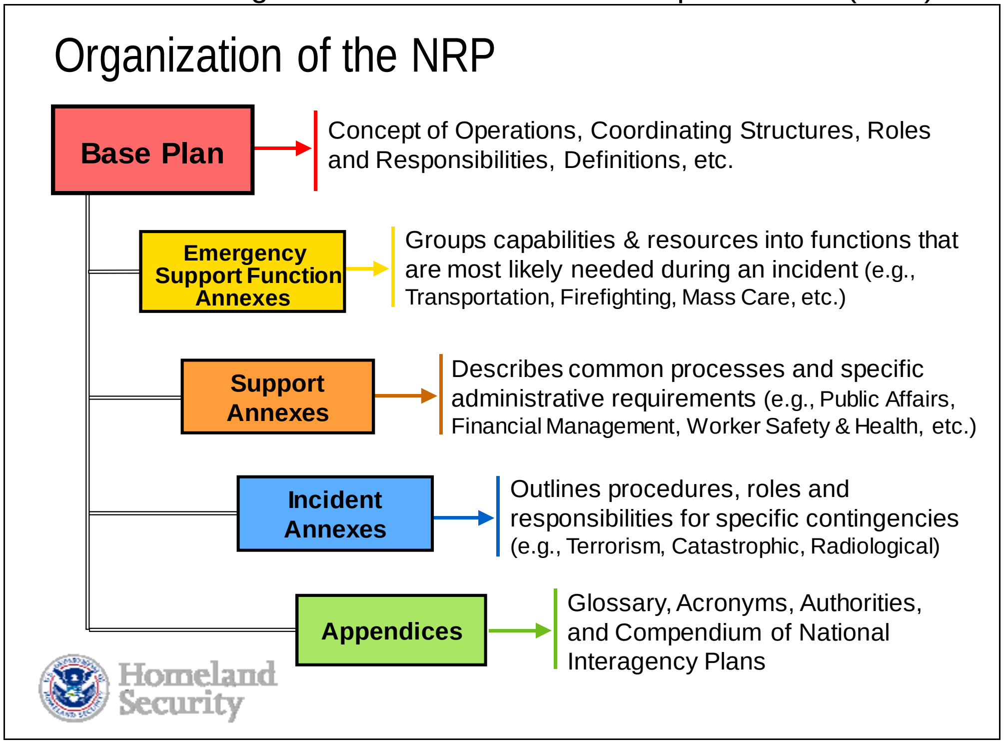
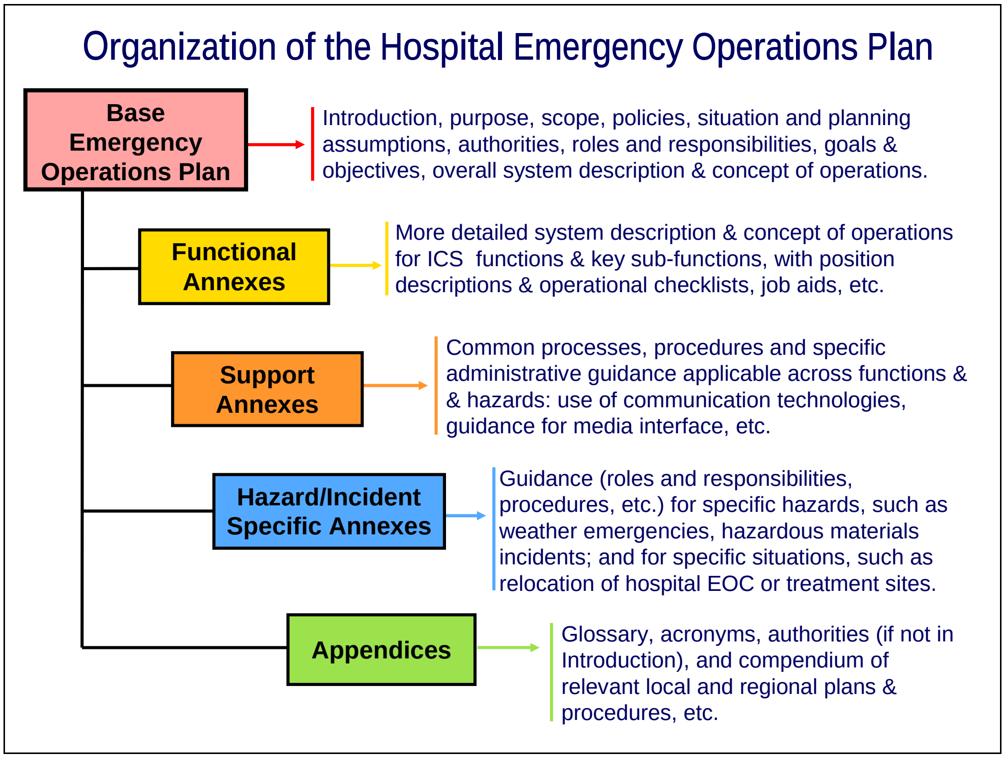


Exhibit 1.5.2.2. Candidate template for a healthcare organization's EOP structure.



A proposed EOP template for healthcare systems is described. It includes a Base Plan which covers an overview of basic principles with follow-on annexes and attachments that provide more detail and tools for use during response.

Textbox 1.5.2.1 provides a more detailed explanation of the EOP format.

Textbox 1.5.2.1

Healthcare System EOP Template

The material developed for the EOP should be formatted for ease of use during response and recovery yet must remain comprehensive. This EOP format is consistent with the common format of other disciplines and is consistent with the National Response Plan and National Response Framework (NRF) format. For smaller organizations, some of the sections can be consolidated, such as consolidating functional annexes into the base plan.

Introduction (may be considered part of the Base Plan)

- Title page.
- List of changes (with dates) to the EOP.
- Table of contents.
- Introduction: Describes the organization's role, the importance of effective emergency response and recovery for the organization, and the uses for the EOP. It may include brief summary of the EOP's intended use: much is as a model guiding preparedness, but sections are designed for "pull out" use during response and recovery; explains how they may be accessed at that particular organization.
- Executive summary: Provides context and presents a brief overview of the EOP's guidance for emergency response and recovery.

EOP Base Plan

The Base Plan provides an overview of the organization's emergency response (purpose, scope, situation, assumptions, and authorities), describes how the emergency response system is structured (System Description) and Concept of Operations including assignment of responsibilities, direction and control, incident action planning process, information processing, communications, logistics, administration and finance methods. It also provides guidance for the emergency response interface with the organization's outside environment during emergencies and disasters. Appendices to the Base Plan commonly provide additional detail for the situation, authorities, and references. Essential sections include:

- Purpose/Mission: goal and objectives.
- Scope.
- Situation and assumptions.
- Policies and Authorities.

- Concept of Operations (including a System Description). Presents how response is organized/structured (the system description) followed by the processes and procedures that operate the response.

<u>EOP Functional Annexes:</u>
A Functional Annex is a specific section that describes additional detail and guidance for how the organization performs within an ICS section and/or achieves a primary mission during emergency response and recovery. It includes the roles and responsibilities, structure, general strategy, and tasks for achieving the general objectives of that function. It refers back to the all-hazards aspects of the base plan where appropriate, and may include specific guidance for that function, specific operational checklists, forms or other specialized tools. Essential continuity of operations and other major activities sustaining mission critical functions are incorporated into functional annexes.

- Each functional annex provides the general response objectives for the functional area, the response structure, activation and mobilization procedures specific to that function, and its concept of operations.
- Position descriptions and qualifications, operational checklists (job action sheets) for the positions.
- Forms (including ICS forms) and other job aids to accomplish the tasks.

Example Functional Annexes:

- Command Group (Command, Safety, Public Information, Senior Liaison).
- Operations (with broad high level description of branches).
- Logistics (with sub-functions such as supply unit, volunteer management, medical unit – care of personnel, etc.).
- Planning (with specifics on incident action planning and on the specific unit functions).
- Finance/Administration (with specifics on the specific unit functions).

In a detailed EOP, the Operations Functional Annex may be sub-divided into functional annexes for each of the major capabilities:

- Protection and Security.
- Continuity of Operations.
- Medical surge.
- Support to External Requirements.

EOP Support annexes:
A Support Annex describes specific administrative processes and response procedures that apply to all or most of the response functions and are applicable to response and recovery across most hazards. They are designed to be available for each service level plan to maintain consistency across the organization.
Example Support Annexes:

- Communications Support Annex: Provides guidance to functions on use of communications technology employed by the facility for emergency response communications.
- Media interface procedures: Describes guidance for responders' interaction with the media, including obtaining specific guidance from the PIO.
- Worker Health Support Annex: Provides guidance on keeping personnel healthy (including receiving specific guidance from the safety function) and how to obtain medical assistance for personnel during response.
- Financial Procedures Support Annex: describes how to track additional personnel and other resources, how to retain and submit receipts for reimbursement, and documenting other response expenditures.

Incident-Specific & Hazard-Specific Annexes:
A Hazard Specific Annex describes the strategies and the elements of the concept of operations that address a specific hazard, specific situation, or specific site. It differentiates or extends guidance from the EOP's all-hazard base plan and functional annexes (i.e., strategies and guidance in the base plan and functional annexes should not be repeated in the Hazard Specific or Incident Annexes). It may also describe specific operational checklists, maps, forms or other specialized tools. Example annexes include:

- Hazard-specific annexes (pre-plans for common hazards):
  - Weather emergencies.
  - Hazardous materials (including white powder).
  - Infectious disease outbreak.
  - Explosive threat.
  - Security situations.
  - Care for the High Level Protectee.
  - Civil disturbance.

- Incident-specific annexes (pre-plans for functionally similar incidents):
  - Shelter-in-place/Evacuation.
  - Mass gatherings that may affect the organization's operations.

Appendices
Additional material that is relevant to guidance for emergency response and recovery, including:

- Guidance appended at appropriate locations in the EOP: This may include the current service level plans for Units within the organization (see text in Lesson 1.5.4).
- Glossary.
- Acronyms.
- Authorities (if not incorporated into the Introduction).
- Cross walks that demonstrate how the EOP incorporates regulatory and statutory requirements into the relevant sections of the guidance.
- Planning assumptions (both for preparedness and response) that provide further detail beyond that presented in the relatively brief "situation and assumptions" section, to explain the basis for the EOP guidance.
- Compendium of pertinent local and regional response plans and procedures.
- Resource lists and contact information.

The EOP development and revision process

The EOP development process should receive input from internal and external resources as appropriate.

- EOP development and revisions: Appropriate personnel must be identified and involved in the development and revision of the EOP, and this cohort likely extends beyond the formal EM committee membership.

  - Internal input: "In-house" subject matter experts or outside consultants may provide critical input on specific components of the EOP.

  - External input: Personnel external to the facility may also provide invaluable recommendations for integrating the healthcare system's EOP into the community response plans. For example, specific notification and reporting procedures from the facility to external agencies may already be established.

  The actual work of constructing major sections of the EOP, though time intensive, is best achieved by a small select group of personnel who are provided adequate administrative support. The larger group, through the EM committee, provides input or comment to these draft documents until they are finalized and accepted. This will maintain consistency of format and content throughout the development of various EOP components.

The HVA is a critically important information basis for EOP development and improvement.

Both preparedness planning and response planning assumptions are helpful in guiding EOP development.

Pertinent Healthcare System response assumptions must be considered at the beginning of any incident.

If response planning assumptions are not valid for a specific situation, adjustments to the usual EOP guidance may be necessary for that incident.

- Using the HVA and Planning Assumptions in EOP development: At the outset of EOP development or major revision, it is imperative to use the findings of the organization's HVA to assure high-risk hazards and critical vulnerabilities are addressed. These findings may also be used in establishing planning assumptions for both preparedness and response.

  - Hazard Vulnerability Analysis: As discussed in Module 1.3, the HVA delineates the most serious hazards facing the organization, and captures the organization's vulnerabilities so that they can be addressed in mitigation (see Module 1.4) and in preparedness and emergency activities.

  - Planning assumptions: A clear understanding of the assumptions upon which the healthcare system EOP is based is required. The use of assumptions in system development is discussed in Lesson 1.2.1 and relevant assumptions are listed and discussed in detail in Lesson 1.2.2.

    Response planning assumptions are distinguished from the preparedness planning assumptions utilized in the development of the EOP (see Lesson 1.5.1), but both are helpful to list. Both types of assumptions are useful in guiding EOP development and improvement and so may be memorialized in an appendix to the EOP. Response assumptions, however, are also operationally relevant parameters that must be examined during incident response. If they are not valid for a specific incident's circumstances, the EOP-provided guidance may not be adequate to assure response success. This step alerts the appropriate managers that response adjustments or complete change in actions may be indicated before executing the response called for in the EOP. See examples of this important concept below.

    Examples of response assumptions that should be considered at the beginning of any event include:

    - Patient decontamination example:
      - Response Assumption: The hospital is not within the zone of release of a hazardous material incident.
      - Response Adjustment: If the hospital is in the zone of release for an incident, then Level C personal protective equipment may not be sufficient for hospital "first receivers"[272] working in the outside environment. Alternative

[272] The term "first receivers" is presented in OSHA. *OSHA Best Practices for Hospital-Based First Receivers of Victims.* U.S. Department of Labor, Occupational Safety &

strategies must be considered, such as sheltering in place (with victim self-decontamination if possible) or facility evacuation.

- Security example:
  - Response Assumption: Hospital security has adequate resources to control the surge of patients presenting, plus any identified security hazard that creates life-safety concerns.
  - Response Adjustment: If this is not true, then alternative tactics, such as perimeter lock down assisted by facility personnel, may be indicated until the security threat is addressed.

- Protection and security example:
  - Response Assumption: The surge capacity and capability measures for a hospital assume that the structure is safe for continued operations post-impact.
  - Response Adjustment: If a facility assessment conducted after hazard impact indicates a life safety threat to personnel and patients, facility evacuation may be necessary. The usual objectives of treating new patients as they arrive may be altered or suspended until at risk staff and current patients are evacuated or otherwise have their safety addressed.

- Continuity of Healthcare Services example:
  - Response Assumption: Healthcare service areas will be operational after hazard impact or adjustments are necessary.
  - Response Adjustment: Managers should have an incident specific annex in the Healthcare System's EOP for resuming patient care operations in alternative facilities such as a back-up structure or temporary outside facilities.

Incorporating ICS into the EOP response guidance

In developing the EOP, it is important to emphasize that the stand-alone use of general ICS or any branded ICS product such as HICS[273] is relatively useless for healthcare systems, unless adapted specifically to

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Health Administration (January 2005); accessed February 8, 2010 at: http://www.osha.gov/dts/osta/bestpractices/firstreceivers_hospital.html

[273] California Emergency Medical Services Authority. *Hospital Incident Command System (HICS)* (August 2006, accessed February 10, 2010 at: http://www.emsa.ca.gov/hics/

the individual healthcare organization's specific situation. ***To be most effective in emergency response and recovery, ICS should be incorporated seamlessly into the healthcare organization's Emergency Operations Plan (EOP) in a comprehensive and consistent manner. The EOP should not, however, regurgitate ICS in a fashion that is non-specific to the organization. With this approach, ICS is "practiced" whenever personnel are following the individual organization's EOP guidance for emergency response and recovery***.

Because of this, consistency in application of ICS principles, titles, and relationships should be maintained across all aspects of the EOP and recovery plan. This becomes a critical strategy when developing, implementing, and revising the EOP and its components. Additional benefits from this approach include greater consistency with local and State Emergency Operations Plans and the National Response Framework, and transparently meeting the NIMS consistency requirements for federal funding support.

Accomplishing this requires a thorough understanding of ICS as it applies to the healthcare system's EOP, and so this is presented in great detail in subsequent lessons in this module and in Units 2 and 3. Integration of ICS concepts into the EOP and each of its components is emphasized.

EOP Liability Issues

Some authors recommend that the EOP state at the outset that it does not set specific policy and that EOP guidance is for "best practices," not for setting a standard.[274] It is also important to note that the guidance is discretionary, not mandatory, and that judgment is expected in following the guidance. The words "must" and "shall" should be avoided and words such as "should" used instead. Similarly, the terms "standard operating procedure" or "SOP" and "standard of care" should be avoided. A candidate introduction for liability protection, recommended by one author,[275] begins with, "This document represents a series of best practices. The document is intended only for the use of this agency and not for any other agency. The document is not intended to be relied on by any other individual, public or private, or agency. The document may not be used in court or in any other forum against the agency or

[274] Pinsky BM. *NIMS Directives and Liability*. Fire Engineering (March 2009); accessed July 23, 2009 at:: http://www.fireengineering.com/display_article/355911/25/none/none/Depar/NIMS-Directives-and-Liability

[275] Ibid.

against any individual, other than use by the agency." Noting that reference to NFPA or other standards (such as accreditation standards of The Joint Commission) is not recognition of these as standards, but instead an attempt to achieve the best practice.

The organization's legal counsel should be consulted for this and all other legal aspects of the EOP.

EOP access

Knowing where the healthcare system EOP is located and how to access it is just as important as knowing how to use it during response and recovery. Essentially, two options are available for healthcare systems, each with its own advantages and disadvantages.

- Hard copies: If the system utilizes printed ("hard") copies of the EOP, multiple copies must be printed and kept at various locations. These should be in a consistent place in each geographic location (for example, at a nursing station on each floor). EOP functional annexes that are applicable to that geographic location should be highlighted in some fashion (for example, management tools would be highlighted for the copy kept in the designated Healthcare System Command Post or Emergency Operations Center). For tools that might be distributed to several personnel during a response, multiple copies should be available as "tear-outs" for rapid distribution of guidance. A major disadvantage of utilizing hard copies is the difficulty in updating the EOP (requiring every copy to be updated every time the EOP is revised), and refurbishing it (replacing tear-out sheets, assuring other pages weren't removed, returning it to designated location) after each exercise and incident. Without re-printing and re-distributing the entire EOP each time it is used or a change is made, it is difficult for users to know if they are working from a complete and up-to-date EOP.

Hard copies and electronic copies of the EOP both have specific challenges in their use and maintenance.

- Electronic copies: For areas with easy access to computers, copies of the EOP may be kept on hard drives or an intranet (ideal). The intranet configuration should, if possible, allow personnel to obtain and complete their position specific response tools (such as forms and reports) on the computer and for the electronic submission of these to relevant parties within the intranet. For hard drive forms, they should be formatted to allow electronic completion and submission via email or other electronic filing. Many of the data forms are best developed in software (Microsoft Excel© and others) that allows rapid aggregation of data and other expedited processing. While the electronic methods facilitate keeping the EOP current

Demonstrable knowledge and skills regarding appropriate access and use of the Healthcare System EOP are critical for all personnel involved in emergency response.

(through a centralized process that changes only one master document), it carries vulnerability (electrical power or IT failure) and limitations such as time urgency (for example, if Occupant Emergency Procedures are activated requiring emergent evacuation) and printing requirements. Back-up methods (CD copies and offsite but accessible storage of the EOP, for example) may mitigate some of the electronic risk. High-speed printers should always be available so that required forms, guides, and other documents may be printed rapidly and distributed to responders. Truly emergent guides, such as some operational checklists and ICS-style forms, should always be kept in hard copies that are immediately available.

- Combined approach: The best approach to maintaining the EOP in a consistent, up-to-date, and available state may be a combination of both hard copies and electronic files. All electronic "pages" should have a date-stamp, so that the hard copies can be periodically checked against the electronic version to assure that the printouts are current.

Education and training on the access and use of the EOP.

All personnel should be trained to access and use the sections of the EOP relevant to their potential roles and positions in emergency response and recovery. A critical competency that all employees of the healthcare system should demonstrate at the operational level of proficiency (see Competencies discussion in Lesson 1.5.6) is the ability to find and access their relevant sections of the EOP, and to use the document as directed. The general knowledge and skills for this should be addressed for all personnel involved with emergency response and presented in employee and staff orientation programs. The ability to access the EOP should also be demonstrated as part if personnel refresher training.

Additional details on education and training within the EM program are presented in Lesson 1.5.7.

Lesson 1.5.3 The Healthcare System Emergency Operations Plan: Introduction, Base Plan, and Functional Annexes

Lesson Objectives

- *List important elements for consideration to include in a healthcare organization's Base Plan to the EOP.*
- *Define Functional Annexes to the healthcare system EOP and provide candidate example annexes.*
- *Relate why and how the Operations Section may vary depending upon healthcare organization or incident.*
- *List the types of tools that should be found in the EOP and explain their utility.*

Introduction and Background

An overview of the healthcare system emergency operations plan (EOP) is presented in Lesson 1.5.2. A recommended EOP format for the healthcare system emergency operations plan (EOP) is summarized in Textbox 1.5.2.1. This lesson provides additional detail on this EOP template by discussing the EOP introduction, the base plan, and functional annexes. Other EOP sections are further detailed in following lessons.

EOP Introductory section

One purpose of the introductory section of the EOP is to identify and describe the larger organization responsible for the specific EOP. This should include a *brief* description of the overall organization and the Emergency Management Program more directly responsible for the EOP. In addition, the introduction should explain the EOP's importance to the organization and the relationship of emergency management to the larger administrative architecture. An overview of the EOP contents, the executive summary, may also be included within this section. A common administrative practice, which can be helpful with version control, is to include a revision record so the users can judge the currency of the specific EOP copy they have accessed.

The EOP introductory section may therefore contain the following sub-sections:

- Title page and table of contents: The title page defines the organization for which the EOP applies.

- List of revisions made to the EOP: Dates, page numbers, and general headings of material that has been changed should be listed.

- Introduction: This important section sets the tone and emphasizes the importance of the EOP for the organization.

    - The purpose of the EOP: This part of the introduction explains that the EOP memorializes the organization's planning for emergency response and recovery and that it provides guidance for preparedness as well. It should also note that the EOP guidance is for best practices, not as standards, as explained regarding liability in the preceding lesson.

    - Use and maintenance of the EOP: Brief statements that outline uses and the maintenance of the EOP should be provided.

EOP Executive Summary is not intended to be a primary instrument for use during response.

- Executive Summary: An Executive Summary can be used to provide a brief overview of the EOP. As such, the Executive Summary is not ideal for use during emergency response and recovery. Instead, it is a tool utilized during mitigation and preparedness phases of Comprehensive Emergency Management (CEM) to explain the healthcare system's response role and mission(s) and its emergency response architecture to new healthcare system personnel and to entities external to the healthcare system. The types of situations where the EOP may be used are briefly described, as well as how the EOP is activated and the response is conducted.

EOP Base Plan

The Base Plan is expected to be used only as a "reference" for specific questions during response.

The base plan provides relatively high-level, all-hazards guidance for how the organization structures and operates its emergency response capabilities under incident conditions. Sub-sections include Purpose, Scope, Policies and Authorities, Situation and Response Planning Assumptions. As described in Lesson 1.5.2, these components of the EOP provide the background, important context, and authorities for the EOP.

- Purpose: It is important that the mission and major roles of an organization during emergency response and recovery are well described. The mission and roles should be understood both internally and within the community's emergency response network. By delineating these within the healthcare system's EOP, the context is established for all actions undertaken during emergency response by the healthcare system. The purpose may be presented using a mission (or goals) statement and general objectives. As previously presented in this text, candidate statements may be as follows:

- Mission (Goal): Provide the best possible care to victims of an incident while maintaining safety and security, protecting the integrity of the healthcare organization, and sustaining the regular medical mission in the community.

- Generic Incident Objectives:

  - Maintain a medically safe and secure environment for personnel, current patients and visitors.[276]

  - Sustain the organization's functional integrity: business, facility, and usual healthcare service operations.

  - Provide health and medical surge services to incident patients as indicated.[277]

  - Integrate into the overall emergency response, meeting the organization's external emergency response and recovery commitments.[278]

  - Address environmental and regulatory concerns where indicated, without compromising the higher priority objectives above.[279]

- Scope: A brief statement can be provided that outlines the "boundaries" of the EOP and summarize major potential incidents in which it is intended to be utilized. It explains the EOP as guidance for best practices and not standards or formal policies. It may be helpful in this section to re-emphasize that the EOP activation is not an all or nothing phenomena and processes can be utilized in a variety of configurations.

- Policies and authorities: This section lists the various formal organizational policies that are related to the EOP. For example,

Delineating the Healthcare System's general incident objectives provides context and direction for the EOP.

[276] "Medically safe" means an environment that supports usual medical care, including temperature/humidity, hygiene and similar issues.
[277] Recognizing that not all hazard impacts result in the generation of additional patients
[278] Examples of these commitments may include participation in healthcare coalition activities (mutual aid, information sharing and other activities), re-supply of EMS vehicles per an existing contract, or providing personnel for deployment on Disaster Medical Assistance Teams (NDMS) or for other federal, state or local disaster assistance programs.
[279] This recognizes that in extreme circumstances, conditions may exist where this objective is secondary to the preceding life-safety objectives.

official policies regarding leadership order of succession may be listed. Another salient policy that could be listed might be a medical staff by law that relates to integration and credentialing of licensed practitioners during an emergency. The intent of this section is to highlight and list formal organizational policies, not to repeat them in detail. Specific authorities can be listed as well. These are more likely to apply to "external" organizations such as parent organizations or even public sector response organizations. Their roles and responsibilities can be summarized briefly. More detailed descriptions of policies and authorities may be included in an appendix to the EOP.

  - Situation and response planning assumptions: As noted in the preceding lesson, specific assumptions may be necessary to verify at the beginning of incident response to gauge applicability of the EOP guidance. These may be summarized here and specific assumptions repeated later under more specific guidance (e.g., HAZMAT assumptions listed under that incident/hazard specific annex).

The Concept of Operations provides detailed procedures to be followed during the successive stages of an incident response.

- Concept of Operations: As described in Lesson 1.5.2, the base plan should include a **System Description** which provides details on the organization of management and response capabilities as well as other capabilities that support these two. This should be in a format consistent with ICS and NIMS and would translate into a description of command, operations and the support functions of planning, logistics, and finance/administration. The follow-on section of the **Concept of Operations** provides detailed procedures to be followed during the successive stages of an incident response in order to integrate and coordinate the different healthcare system components in the System Description. In many plans, these are combined and referred to only as the "Concept of Operations," but the System Description should be clearly delineated within it.

  Position descriptions for specific response and recovery roles should be included here as attachments.

  As an example of how this material impacts preparedness activities, position descriptions could be utilized to guide the development of emergency response and recovery competencies for each position (these would be memorialized in documentation separate from the EOP). Preparedness resource management (see lesson 1.5.5), provides training for these competencies and evaluation to demonstrate the designated level of proficiency for the relevant competencies to better ensure effective emergency performance.

Organizing the Base Plan System Description

The base plan system description describes the ICS functional areas (Command Group and the four Sections) as they are incorporated into the healthcare system's emergency response and recovery organization. It then explains how these operate via the concept of operations. This material is extensively presented in Modules 3.1 (system description) and 3.2 (concept of operations).

The function that has the potential to vary the most across incident response is the Healthcare System's Operations Section. It commonly differs between organizations and also varies within an individual organization based upon incident type. At the same time, developing an "all-hazards" operations section template that can be evaluated and populated based upon initial incident parameters will facilitate initial incident response. This is consistent with the approach taken by VHA.

As noted throughout this text, the healthcare system should focus on its four major emergency response and recovery capabilities. This text proposes that healthcare systems organize their operations section accordingly, with preplanned branches (or groups) within the operations section tied to these capabilities:

While developing the EOP, it is important to consider the many ways in which Healthcare Systems can be impacted by hazards.

- Protection and Security
- Continuity
- Health and Medical Services
- Support to External Requirements.

This approach to structuring the healthcare organization's "all-hazards" Operations Section is discussed in further detail in Lesson 3.1.2.

As with Command and the other incident management team sections, key positions within this organizational structure should be described in the EOP.

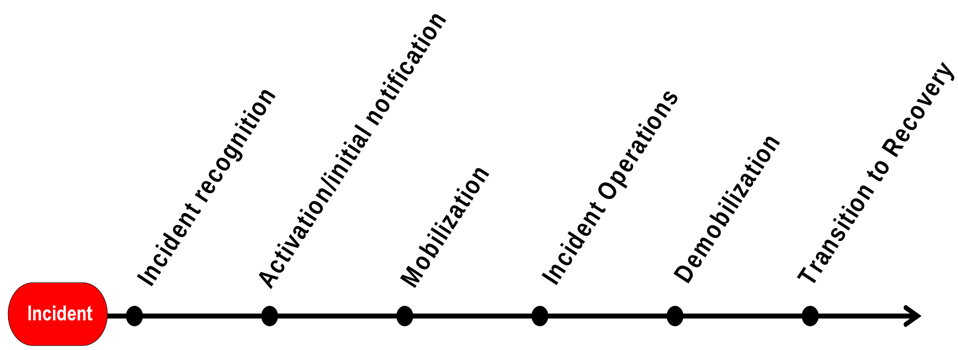
Organizing the Base Plan Concept of Operations

After the description of essential functions (system description), the Base Plan should outline essential procedures for managing and operating the functions across the progressive stages of an incident. A range of descriptions are available to describe stages of an incident. The model used in this text describes key activity areas as "stages" and therefore promotes a comprehensive concept of operations. These are presented in detail in Lesson 3.2.1 and are summarized in Exhibit 1.5.3.1.

Additional activities relevant to specific stages of emergency response and recovery should be considered. These are discussed in detail relative to Healthcare Systems in Module 3.2.

Important procedures to highlight include those related to organizational information and resource management across the stages.

Exhibit 1.5.3.1. Stages of Incident Response



EOP Functional Annexes

EOP Functional Annexes contain emergency response and recovery guidance that addresses key areas of healthcare system response in greater detail than in the base plan. A common and accepted method is to organize "function-specific" guidance according to the five components of ICS (management, operations, logistics, plans, and finance/administration) though this can be flexibly established.[280] For an incident management team with complex objectives and therefore a potentially large and/or varied operations section, functional annexes could be developed to provide guidance individually to operations section branches or to key functional groups.

Most healthcare systems can anticipate that the Operations Section of their EOP will be relatively complex due to the multi-disciplinary nature of healthcare emergency response, the plethora of procedures and organizational elements, and the wide range of incident types. Developing Operations Section "all hazards" response guidance with the necessary level of detail may therefore be best located in Operations Section Functional Annexes distinct from the EOP Base Plan.

[280] The National Response Framework organizes its functional annexes by 15 Emergency Support Functions; the Veterans Health Administration Emergency Management Guidebook has in the past defined its functional annexes as combinations of ICS sections (Command-Plans, Logistics-Admin./Finance) and by the ICS Operations Section groups that it has designated (business continuity, safety and security, health and medical, equipment/plant and utilities).

While the Operations Section of a healthcare system IMT can vary significantly in structure, this text presents the section structure noted above for an "all hazards" generic operations section organization. This functional arrangement ties directly to the four major healthcare system emergency capability categories delineated in Lesson 1.1.1. The candidate Functional Annexes in this approach may be constructed as follows:

- Operations Section Functional Annex: General information regarding the management of the operations section with accompanying tools, job aides, ICS forms serving as attachments. This level of detail, however, may be presented in the EOP Base plan and so a general operations section functional annex may not be necessary. Alternatively, an Operations Section Functional Annex may be described with the four following branches also described within a single annex.

- Protection and Security Branch Functional Annex: A branch dedicated to activities that protect staff, visitors and patients as well as supervise security activities. This branch could address relatively common emergency functions such as perimeter lock down and management. The branch also may supervise the coordination of Occupant Emergency Procedures being conducted within the facility at the direction of the Incident Commander. Functional annex material would include descriptions of the branch director position and the "all hazards" reporting methodologies.

- Continuity Branch: Depending upon the organization, this branch may have its main activities grouped according to continuity of infrastructure and continuity of business operations.[281] The former addresses monitoring and maintaining the healthcare organization's mission critical infrastructure such as utilities, heating and air conditioning, facilities, supply chains, and similar areas. Business operations continuity focuses on mission critical administrative support (e.g., records, billing and financial management, and others) that must be sustained for the organization to function adequately.

- Health and Medical Services Branch: This branch addresses all incident-related patient care services whether due to surge in patient

The Operations Section's branches may correspond with the incident objectives for the healthcare organization.

[281] It is noted that some "continuity" activities could occur in other branches such as the Healthcare Services Branch. For example, issues related to sustaining medical care during a power outage is "continuity", but it is managed and conducted by those managing healthcare services. In this example, these activities would likely be supervised in the separate Healthcare Services branch, with interface through the Operations Section Chief. See Lesson 3.1.2 for a more detailed discussion of the flexibility of this arrangement.

volume or unusual patient cases (e.g., SARS). This annex may also provide detailed information for managing health and medical continuity of healthcare services on the same clinical units for the regular patient population. It generally also includes the supervision and coordination of clinical *support* services, since their functional roles are tightly tied to patient care services.

- Support to External Requirements Branch: This branch could be established to supervise activities that the healthcare system performs in support of external organizations. For example, if a healthcare system is providing personnel to another organization through mutual aid, this activity may best be conducted through this individual branch.

With an all hazards Functional Annex like the one described above for an Operations Section, the healthcare organization selects which branches are most applicable for response to the specific incident and staffs them appropriately. Incident- and Hazard-specific Annexes (e.g., evacuation) would provide templates for which sections to staff (see next lesson and Module 3.2).

Two other common Functional Annex examples are:

- Planning Section Functional Annex: This outlines *in detail* the healthcare system incident action planning process and other important roles for the Planning Section in supporting incident management.

- Logistics Section Functional Annex: This outlines in detail the Logistics Section processes and procedures for resource support activities such as communications support, volunteer processing, and medical care for healthcare system personnel injured during response.

Attaching EOP Forms, Checklists and other "Tools"

The EOP Forms, Checklists and other "Tools" are designed as guidance that can be utilized within the emergency response context.

Guidance presented in the functional annex section of the EOP is best supplemented by accompanying "tools" and job aids that specifically relate to functional annex guidance. These can then be utilized under the duress of emergency response and recovery. For example, the Incident Action Plan forms and other specific planning section guidance tools could serve as attachments to the Planning Section Functional Annex above. Alternatively, the tools can be incorporated into the EOP in a separate appendix.

To facilitate the use of these tools and aids, they should be formatted as "tear-out" sections if the EOP is in hard copy or rapidly printable files if the EOP is in an electronic format. During an incident, healthcare system personnel can rapidly acquire and distribute guidance documents and relevant forms specific to their area's assigned role in the response. Several important types of EOP "tools" are presented below for consideration. These may be included as attachments to the Functional Annexes and function as operational checklists and other short documents to guide actions, so they are especially useful if they have been developed in a self-explanatory manner. Examples include:

- Mobilization checklist: This describes the series of steps that are necessary to transition a resource from baseline mode (such as everyday healthcare service or from a cached and stored condition) to a functional emergency resource. Mobilization guides are important for personnel resources (such as the IMT Command and General Staff, or a Patient Decontamination Task Force); for facility resources (such as a mass casualty reception area or a hospital emergency operations center); or for equipment/supplies resources (such as the equipment and supplies cache stored in closets for use in an alternate treatment site within the healthcare facility).

- Call-back procedures checklist: The call-back procedures, message development and strategy for call priorities, should be delineated and standardized across the organizations. For a particular department or functional area, the service level plans may refer to this checklist and provide current points of contact for key personnel.

- Operational checklists or job action sheets: The term "job action sheets" is often used in medicine and health to refer to what are really "operational checklists." These sheets serve as "tear out" or rapidly printable instructions for **individual positions** designated in the EOP base plan or a functional annex. They may also be attached as guidance for hazard or incident specific positions or situations in the relevant hazard- or incident-specific annex. The guidance provided is best presented in bulleted format, with brief statements about each required action for that position. The defined activities should cover each of the stages of an incident as outlined in the Concept of Operations (see Lesson 3.2.1). The required actions may also refer to the use of other tools such as the checklists mentioned above, or the ICS forms presented below.

  The operational checklists or job action sheets present **functionally described actions** that are not hazard or incident specific. Incident specific information is maintained in the EOP's incident specific annexes.

Exhibit 1.5.3.2 Example of an Operational Checklist

DECON SAFTY OFFICER
Operational Checklist

Personnel Description
The DECON Supervisor position is staffed by personnel who have successfully completed the ___ General DECON Team and DECON Safety Officer training; also trained to the level of HAZMAT First Responder Operations or equivalent.

Initial Incident Operations
- ☐ Evaluate the incident information for agents or contamination levels to assure that they do not exceed the protective capability of the staff PPE
- ☐ Evaluate the decision on the appropriate mask filter cartridges to use for the incident.
- ☐ Monitor all DECON Area set-up, patient reception and decontamination activities to assure safe practices (resolve any trip or slip hazards, electrical hazards, etc.)
- ☐ Assist with preparation of DECON areas.
- ☐ Assure initial medical screening of staff prior to dressing in protective gear, including safety officer.
- ☐ Assure that appropriate PPE is available (See PPE section) for all team members including back-up personnel.
- ☐ Perform individual safety check to assure that each DECON staff member has adequately donned PPE.
- ☐ Assure all personnel are wearing position identification vests and their name is visible for easy identification.
- ☐ Don your PPE and have safety check performed on you.
- ☐ Establish communications with designated leader position for safety and any operational issues.
- ☐ Brief the DECON team personnel on safety issues in performing DECON.
- ☐ Intervene as indicated to assure staff safety.

Ongoing Incident Operations
- ☐ Act as safety officer for all DECON activities.
- ☐ Continually evaluate the incident for agents or contamination levels that would exceed the protective capability of the staff PPE.
- ☐ Assure suit integrity of PPE for all staff at all times.
- ☐ Monitor personnel for signs of fatigue, dehydration, heat/cold or other stress.
- ☐ Assign personnel to monitor you for signs of fatigue or illness.
- ☐ Assure safe practices are adhered to in patient lifting and movement activities.
- ☐ Monitor decontamination areas to assure that clean areas (hand-off area, hospital entrances, and others) are not being contaminated with wastewater or other materials.
- ☐ Maintain communications with designated leader position for safety and any operational issues.
- ☐ Assure staff rotation during prolonged DECON operations.
- ☐ Intervene as indicated to assure staff safety.

Demobilization
- ☐ Monitor all staff doffing of PPE and DECON Area demobilization activities to assure safe practices.
- ☐ Assure post-DECON medical checks on personnel (including you) and any indicated follow-up is conducted.
- ☐ Continue role until DECON DEMOB is completed.
- ☐ Complete reporting per protocols.

ICS forms are potentially powerful tools for Healthcare Systems during incident response, but require some adaptation from the standard ICS format and content.

○ ICS forms: ICS forms customized for the specific healthcare organization's EOP are another valuable set of tools attached at appropriate locations within the EOP. As described in Lesson 2.1.2, the incident action planning is in part "form driven." This means that many of the important activities to be achieved during response and recovery, including developing and documenting critical response information, are guided by completing and processing the ICS numbered forms. These pre-formatted guides prompt decision making and capture specific information during an incident. As an example, the ICS 207 is an ICS organization chart that, during completion, prompts the recording of names assigned to specific positions within the response organization. Having an ICS 207 completed and disseminated can be very helpful internally (so that personnel know who is filling what position) and externally (so that external agencies are able to see how the response organization is structured and who their points of contact may be).

- Adjustment to wild land fire ICS forms: ICS forms were originally developed for the wild land firefighting environment. The format of the forms therefore requires adaptations for healthcare systems. The intent of each form, the designation of the position responsible for completing each form, and the designated disposition of each form should remain consistent within standard ICS. For example, in the ICS 207 example from above, it would be unlikely to have an Air Branch on the organizational chart for most healthcare facility-based systems.[282] The ICS organizational chart for a healthcare organization may have different titles for branches, units, and other ICS sub-divisions, but would still be organized within the five sections (command or management, operations, logistics, plans, and administration/finance). The ICS-207 for the healthcare system would still be completed by the Planning Section during each operational period. In addition, some forms that are not contained within ICS may be needed for documentation of information within healthcare systems (e.g., forms related to patient tracking). As noted later in the text, these generally would be subsets of standard ICS forms and numbered to reflect their relationship.

  Exhibit 1.5.3.3 demonstrates the adaptation of ICS form 202 for a healthcare system.

[282] Adaptation of forms to organizational needs has been accomplished by several agencies within DHS. Two that serve as longstanding examples of form adaptation are the U.S. Coast Guard and the FEMA Urban Search and Rescue System.

Exhibit 1.5.3.3 Sample ICS Form 202 adapted for hospital use.

Purple Ridge Memorial Hospital 202 INCIDENT OBJECTIVES	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
4. OPERATIONAL PERIOD (DATE/TIME)			
5. INCIDENT OBJECTIVES FOR THE INCIDENT			
6. OBJECTIVES SPECIFIC TO OPERATIONAL PERIOD			
7. WEATHER & OTHER HAZARDS FORECAST FOR OPERATIONAL PERIOD (RELEVANT TO HOSPITAL OPERATIONS):			
8. GENERAL SAFETY MESSAGE:			
9. ATTACHMENTS (* IF ATTACHED)			
☐ ORGANIZATION LIST (H 203)	☐ MEDICAL PLAN (H206)	☐ ___________________	
☐ ASSIGNMENT LIST (H 204)	☐ INCIDENT MAP	☐ ___________________	
☐ COMMUNICATION PLAN (H 205)	☐	☐ ___________________	
Healthcare H 202 rev 10-05	10. PREPARED BY (PLANNING SECTION CHIEF)	11. APPROVED BY (HOSPITAL INCIDENT COMMANDER)	

Lesson 1.5.4 Healthcare System Emergency Operations Plan: Support Annexes, Incident/Hazard Specific Annexes, & Service Level Appendices

Lesson objectives

- *Define Support Annexes to the healthcare system EOP and provide candidate example annexes.*
- *Define Incident Specific & Hazard Specific Annexes to the healthcare system EOP and provide candidate examples.*
- *List essential elements of an Incident Specific & Hazard Specific Annex as proposed in this text.*
- *Define Service Level guidance as provided in healthcare system EOP Appendices.*
- *List essential elements of Service Level Appendices as proposed in this text.*

Support Annexes

The EOP Support Annexes describe common support processes and administrative requirements applicable to more than one response and recovery function and are applicable across a wide range of hazard or incident types. The concepts covered in the support annex vary from organization to organization, and all are not necessarily applicable to every incident. The common principle inherent in this annex category is that each support annex provides actionable guidance for performing a common set of tasks during the emergency response and recovery, even though the primary responsibility for that functional area may rest with just one function or sub-section within the activated IMT construct.

Standardizing the format of Support Annexes can facilitate their use during response.

To provide clarity and ease of use for each support annex, a standardized template may be helpful, with defined purpose, roles, and responsibilities presented in a uniform fashion. A suggested template, adapted for healthcare systems from the Federal health-related support annexes in the National Response Framework and from OSHA, is presented below.[283,284]

[283] US Department of Homeland Security. *National Response Framework Support Annexes: Introduction (January 2008*). National Response Framework Resource Center, accessed February 10,2010 at: http://www.fema.gov/pdf/emergency/nrf/nrf-support-intro.pdf

[284] OSHA. *Worker Safety and Health Support Annex*. U.S. Department of Labor Occupational Safety and Health Administration (December 2004); accessed January 16, 2010 at: http://www.osha.gov/SLTC/emergencypreparedness/nrp_work_sh_annex.html

- Title of Support Process or Administrative requirement: A brief title should accurately reflect the focus of the support document.

- Purpose: A brief description of the purpose of the annex should be listed. This is typically achieved by describing the issue that the annex is designed to address and its relationship to successful EOP implementation.

- Scope: This summarizes (often in bulleted format) the key requirements and processes contained in the document. It should clearly delineate situations in which the process or administrative guidance is or is not applicable.

- Policies: Any applicable policies, regulations, or other authoritative basis for the support annex should be listed.

- Response Assumptions: This describes the types of emergency situations where the annex may be used. This is important since adjustments should be undertaken if the incident situation varies from any key planning assumptions.

- Concept of Operations: In a succinct format, this section should present organization of personnel and their roles (system description). Specific responsibilities should be briefly summarized for the function that maintains overall responsibility for the support activity being described (e.g., Media interaction support annex – provide description of PIO roles and responsibilities). Most important, concrete guidance for the applicable personnel is provided in easy to use format across the stages of incident response (as applicable).

- Attachments: If there are forms or other tools applicable to the support annex document, they may be attachments to the relevant support annex. These attachments will often serve as important job aides for service unit level guidance (see below). The NRF Financial Management Support Annex provides a useful example of forms and guidance attachments.[285]

A range of issues may be addressed through support annexes. Textbox 1.5.4.1 presents some of the titles of support annexes for the National Response Framework (NRF).

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[285] US Department of Homeland Security. *National Response Framework Financial Management Support Annex* (January 2008). National Response Framework Resource Center, accessed February 10, 2010 at: http://www.fema.gov/pdf/emergency/nrf/nrf-support-fin.pdf

Textbox 1.5.4.1

National Response Framework (NRF) Support Annexes[286]

- Worker Safety and Health Support Annex
- Financial Management
- International Coordination
- Private-Sector Coordination
- Public Affairs
- Volunteers and Donations Management

Candidate Healthcare System EOP Support Annexes

Specific examples of support annexes that could be beneficial for healthcare systems to develop are briefly described below

EOP Support Annexes provide relevant information applicable across multiple functional areas of the healthcare facility during response.

- Communications Support Annex: Many healthcare organizations have emergency response procedures that utilize communication technologies that are not routinely used during day to day operations (e.g., back up phone systems, portable radios, on-line data collection and messaging tools, etc.). Providing guidance for these technologies that can be easily referenced during response can be important. This information would be ideally presented in attachments to the support annex with the body of the annex containing a brief summary of the management of communications and more details on the technologies.

- Worker Health Support Annex: This document may provide guidance for personnel assigned to various tasks in the response organization to access medical or psychological care during emergencies, since the everyday employee health service access and procedures may not be sufficient or available. Reference to this may then be included in the Safety message and the ICS Form 206 Medical Plan in the current Incident Action Plan. Instructions could also include *documentation requirements* for personnel experiencing injury or illness during response.

- Media interface support annex: Guidance for interaction with the media can be essential to all personnel within the healthcare

[286] US Department of Homeland Security. *National Response Framework Support Annexes* (January 2008). National Response Framework Resource Center, accessed February 10, 2010 at: accessed January 3, 2006. http://www.fema.gov/emergency/nrf/

organization, as emergencies and disasters attract the attention of the press and the public alike. Attachments to this type of support annex could list bulleted concepts such as referring media inquiries to the public information officer or a designated, always available point of contact. When given permission to speak with media, guidance such as avoiding speculation, maintaining patient privacy, and speaking only to the individual's direct job position may also be helpful. This annex should be briefed to all personnel as a reminder to avoid impromptu press conferences that could be counter-productive to the overall response and recovery effort.

- Resource support annex: This may provide guidance on a standardized resource requests/ordering process for all areas of the healthcare system when the Logistics Section is mobilized. The document may also include direction on reporting for the purpose of resource tracking, resource demobilization, rehabilitation and return of equipment and supplies, and other general logistics guidance. A modified ICS 213 form may be used as the standardized request form and would be an attachment to this annex.

- Financial procedures support annex: This may provide guidance for actions that maintain financial accountability across the organization's emergency response. This annex may address:

  - Tracking personnel time until normal timekeeping methods resume.

  - Tracking additional expenses related to the emergency until normal bookkeeping practices resume.

  - Reporting of sub-tasking requests to outside resources that are necessary to maintain functional capability during the emergency but for which the organization is financially liable.

  - Submitting reimbursement requests for out-of-pocket emergency related expenses borne by personnel in responding for the organization.

Incident-Specific and Hazard-Specific Annexes

While the support annexes provide guidance that are applicable across functions and hazards in the EOP, **the incident- and hazard-specific annexes are concise guides for response and recovery considerations for particular hazards and/or incident situations that require guidance beyond the "all hazard" sections of the EOP.**

Incident Annexes provide material that builds upon the Base Plan for response to specific events.

This text utilizes the term "Incident-Specific/Hazard-Specific" as there is a blurring of distinction between the two. The NRF utilizes the term "Incident Annexes" but in reality, some of the guidance documents are specific to an individual hazard type (e.g., tornado). Other annexes may focus on an incident type with guidance for critical actions that are specific to that situation (e.g., healthcare facility evacuation). This terminology may appear a bit cumbersome but is technically correct.

The EOP Incident Annexes provide information specific to certain hazard impacts or threats and response considerations. These can be considered "pre-plans" which are implemented within the construct of the overall EOP.

The priority hazards and incident situations that are addressed in these annexes are selected from the findings in the HVA. These annexes do **not constitute separate, stand-alone plans for each hazard type.** They present **only specific guidance that is not already addressed by the overall EOP** Base Plan and functional annexes. In many cases these annexes serve as "pre-plan" guidance (see terminology textbox) that may include:

- Relevant policies
- Suggested configuration of the IMT (i.e., IMT organizational chart) and positions to be staffed for the incident
- Response assumptions specific to the hazard or incident situation
- Safety and response considerations specific to a particular hazard
- Recommended procedures for assets only used for that hazard type
- More specific functional guidance such as triage or patient care protocols customized for a specific hazard type (such as triage guidelines for radiation exposure).

To be maximally useful during response, the incident annexes should focus on emergency response and recovery actions (see suggested format below), while preparedness guidance for each hazard type is contained in separate preparedness documentation (e.g., preparedness work plan/mitigation work plan).

Terminology alert!

Pre-plans: Guidelines that describe processes and procedures to be followed, plus other response considerations, for specific hazards, incident types and/or specific geographic locations (stadiums, government facilities, special security events, etc.). These build upon the guidance in the EOP base plan and functional annexes, and are included in the hazard-specific annexes of the EOP. Most of the guidance and accompanying considerations in the pre-plan can be accomplished within the usual EOP construct

For example, the healthcare system Contaminated Patient Incident Annex would present specific steps for the reception and decontamination of patients. The overall structure of the response and the procedures otherwise remain as described in the general EOP (e.g., post-decontamination reception, triage, and treatment). With any "pre-plan" guidance in this annex, it is incumbent upon the Healthcare System Incident Commander (or delegated to the Operations Section Chief) to rapidly evaluate the pre-plan response assumptions against current incident conditions to assure that the underlying response assumptions remain valid for the specific incident. Otherwise, adjustments may be indicated to address deficiencies and assure operational success.

The selection of hazard and incident types for inclusion in these annexes should be informed by the HVA process conducted by the healthcare system. Examples include:

- Contaminated patient hazard-specific annex[287]: This annex could address situations in which patients contaminated by chemicals, biologicals (e.g., powder), or radioactive substances present to a healthcare organization.[288] The annex actions are intended to remove or render harmless the contaminants prior to patient entry into the healthcare facility. The stated primary objectives for this

[287] NOTE: As this EOP template is meant to provide flexible guidance, healthcare organizations may choose to place their "medical surge capacity" guidance in different locations in their EOP. This may be developed as a part of a functional annex (e.g. Operations) for healthcare organizations that have streamlined procedures or medical surge capacity could be an incident/hazard specific annex. Examples are presented for consideration only.

[288] Macintyre, A; Barbera, J; Christopher, G.; et al. *Weapons of Mass Destruction Events with Contaminated Casualties* (January 12, 2000). JAMA Vol. 283(2): pages242-249.

annex are the protection of the healthcare facility, the staff, and other patients, and limiting the exposure injury to the contaminated patient. Utilizing ICS principles outlined in the Base Plan, personnel, and other resources should be appropriately organized (e.g., a contaminated patient task force). Guidance in the annex may address:

- Decision support tool for whether patient decontamination is necessary.
- Actions to isolate patients prior to patient decontamination.
- Special triage considerations for contaminated patients.
- Management of patient belongings (presumably contaminated) and chain of evidence protocols (in case a ‘patient’ is a perpetrator).
- Operational procedures for the decontamination facility (mobilization, operations, demobilization, cleanup, and return-to-readiness).
- PPE-related actions, including donning and doffing procedures, operations, limitations, post PPE medical evaluation and follow-up.
- Decontamination process for patients, both ambulatory/self-decontamination and non-ambulatory/assisted decontamination procedures.
- Contingency considerations (e.g., for a patient that acutely decompensates during the decontamination process, for provider exposure, and for contaminated patient entry into the healthcare facility prior to decontamination).
- Protocols or procedures for unusual medical interventions (for example, the use of topical ophthalmic anesthetics to assist patients through the decontamination process).
- Post-incident medical surveillance of providers (both those in PPE and those not in PPE).
- Unique considerations related to coordination with jurisdiction or other relevant external entities.
- Resources (informational) that may be accessed for expert advice

during incident response.

- Biologic disease annex: Similarly, this annex could provide specific considerations that extend beyond the Base Plan. Actual disease entities could be designated from the HVA. It is helpful to develop this broader disease annex rather than multiple annexes each focused upon a very specific disease entity, since many procedures overlap. Within the biological disease annex, a distinction may be made for actions that differ in contagious versus non-contagious disease agents. Guidance could include, as an example, variations on the Base Plan organizational chart such as individuals from infectious disease/infection control designated to serve as senior advisors to the Healthcare System Command staff.

- Special security incident annexes: Though general lock down procedures would be in a Protection and Security Functional Annex, some incident types might warrant individual guidance. Examples include:

    - High-level protectee: Individuals requiring unusual security protection (such as the U.S. President) while receiving medical services at the healthcare facility.

    - Infant abduction: Neonates taken from the healthcare facility's nursery.

    - Civil unrest: Procedures for protecting the facility when there is civil unrest in the immediate proximity.

    - Active shooter: Internal lockdown procedures when a perpetrator with a weapon may be inside the facility.

- Business and reputational crisis: Certain situations may pose a risk to the administrative or business side of healthcare system operations and require coordinated management similar to the more commonly considered emergency hazards. Guidance for managing fast-moving public relations crises, major regulatory or medical-legal difficulties (such as an adverse medical outcome in a celebrity), and similar rapidly evolving, complex scenarios can be invaluable to the healthcare system response and survival.

Incident-Specific and Hazard-Specific Annex Format

The format for these annexes is similar to that used for the support annexes as described above. They are as concise as possible: Title, Purpose, Scope, Relevant Policies, Key Response Assumptions, Concept of Operations, Responsible Parties, and Attachments. The guidance refers to but does not repeat any action guidance already present in the Base Plan or Functional Annexes. An example outline of an incident/hazard specific annex for facility evacuation is provided below to demonstrate the utility of this format.

Example Incident-Specific Annex: Facility Evacuation

- Objective: To provide guidance to healthcare system personnel to allow orderly and safe evacuation for the facility.

Facility evacuations can be both rapid or can occur over a protracted period.

- Scope: This annex is designed to be utilized when appropriate personnel (see below) determine that the facility must be evacuated. It is applicable to incidents requiring immediate and rapid evacuation as well as situations in which less urgent evacuation may be indicated. This annex is consistent with material presented in other components of the EOP.

- Policies: This annex complies with pertinent regulatory guidance, including U.S. Code 29 CFR Part 1910.38 (OSHA) and U.S. Code 41 CFR Part 101–20.103–4 Occupant Emergency Program (GSA) (see textbox 1.5.4.2). The guidance, however, is for best practice and is not a set standard of care under emergency conditions.

Textbox 1.5.4.2 Guidance from two federal sources

What is an Emergency Action Plan?
(US Occupational Safety and Health Administration)

An emergency action plan (EAP) is a written document required by particular OSHA standards [29 CFR 1910.38(a)]. The purpose of an EAP is to facilitate and organize employer and employee actions during workplace emergencies. Well developed emergency plans and proper employee training (such that employees understand their roles and responsibilities within the plan) will result in fewer and less severe employee injuries and less structural damage to the facility during emergencies. A poorly prepared plan, likely will lead to a disorganized evacuation or emergency response, resulting in confusion, injury, and property damage.

What is an occupancy emergency?
(US General Services Administration)

An occupant emergency is an event that may require you to be evacuated from your occupied space or relocated to a safer area. The emergency may include a fire, explosion, discovery of an explosive device, severe weather, earthquakes, chemical or biological exposure or threat, hostage takeover or physical threat to building occupants or visitors.

- Situation and Planning Assumptions: This describes the emergency and disaster conditions where evacuation may be needed, and the key planning assumptions such as assistance from municipal authorities and EMS, available personnel from across the organization to assist in patient evacuation, and others.

- Concept of Operations: Specific responsibilities should be delineated according to functions and positions. As noted above, candidate organizational charts (based on ICS) may be delineated for response managers to consider for the initial IMT structure and position staffing. Utilizing the Operations Section described in the preceding lesson, guidance would prompt the staffing of the health/medical, protection and security, and continuity branches. An evacuation task force may also be activated with responsibilities to supervise the key evacuation activity as directed by the organization's Incident Commander and Operations Section Chief. The guidance is consistent with the Base Plan construct, but extends to address tasks and issues specific to evacuation. Most of this guidance is directed to the Operations Section.

  The Concept of Operations for this annex should include the procedures that guide personnel to achieving their assigned responsibilities. Consideration should be given to the fact that electricity may not be working during an evacuation and job aids and other key tools, both for IMT personnel and in service level personnel within regular units, should be located on hard copy in convenient-to-access locations:

A critical responsibility is determining whether and when a facility should be evacuated. Positions designated as responsible, and any decision support tool, should be included in the Annex.

  - Incident Recognition: The decision to evacuate the facility can in some situations be made incrementally over a period of time or may require immediate decision-making with little time for deliberation. For example, during a large fire, decisions must be made quickly. When there has been severe infrastructure impact but the structure is still safe, a decision may be made over a period of hours (e.g., post tornado impact). In some situations such as occurs with approaching hurricanes, the decision point for evacuation of the facility may actually be early in the pre-impact phase. Multiple evacuation strategies are possible (see Textbox 1.5.4.3). In the development of this annex, it is advisable to engage community response organizations to establish an effective process for these decisions.

Textbox 1.5.4.3

Types of Facility Evacuation/Shelter-in-Place Response

- Partial evacuation: In many situations, only specific areas within the facility require evacuation. This may be "horizontal evacuation," where patients and staff are moved to safer areas on the same floor, or "vertical evacuation," where patients and personnel are moved between floors. The differentiation is made due to the major impediment of moving patients between floors, particularly without the use of elevators.

- Full standard evacuation: In this situation, the entire facility is evacuated in a standard fashion in response to fires and similar hazards.

- Guided evacuation: Procedures should also be developed for a partial or full guided evacuation, where the facility is evacuated through incident-specific routes to keep staff and patients away from special hazards (suspected explosive device, armed intruders, a chemically contaminated area, and others).

- Shelter-in-place: In response to some hazard threats and/or impact, the most advisable course of action can be to shelter in place, including moving to an internal "refuge area."[289] Procedures to rapidly implement this action should be delineated. Shelter-in-place may be combined with an evacuation specific annex or presented in a separate annex.

- Security lock-down shelter-in-place: In rare situations such as an active shooter inside a facility, the most appropriate emergency action procedure is lockdown of internal units and rooms to impede the shooters progress. Directions for this scenario may become important to have developed and available for use. This may be in a separate annex or combined with the more general shelter-in-place annex.

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[289] From U.S. Code 29 CFR Part 1910.38 Emergency Action Plans (OSHA), accessed February 10, 1020 at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9726

Immediate evacuation of areas where patient procedures are being conducted should have pre-established protocols.

- Notification/Activation: As the notification and activation of the emergency evacuation procedures may vary significantly from the regular EOP, these procedures should be well delineated. The authority for ordering activation must be clearly assigned to appropriate position(s) as it can be an expensive proposition for any residential healthcare facility. Within the decision-making process, it should be recognized that some agencies external to the healthcare facility may have superseding authority to order an evacuation (e.g., fire departments and public health authorities can mandate a facility evacuation in certain extreme circumstances in many jurisdictions). Importantly, the competencies for "all personnel" should stipulate an operational level of proficiency for all personnel to understand how they will be notified of a facility evacuation or shelter-in-place. The methodology for making this announcement should be reliable, with permeation to all areas of the facility, and should have back-up mechanisms available, and may even entail reliance on runners. In addition, an initial notification should also be made to the community as well as to other healthcare facilities in the jurisdiction/region. This will help in obtaining transfer locations for patients as well as promote availability of other forms of assistance in a rapid timeframe.

- Mobilization: The mobilization for a rapid evacuation will be relatively straightforward. For evacuations that allow for some formal incident planning, mobilization may allow for more deliberate decision making to adequately address some of the issues listed under Incident Operations. As an example, mobilization procedures might include the set up of an Incident Command Post or EOC for the healthcare facility outside of the structure.

- Incident Operations: Specific procedures that vary or extend beyond the Base Plan and functional annexes should be delineated. These are listed in the annex and the guidance should also be incorporated into the service level plans on each unit. They include

  - Procedures specific to given geographic or functional areas of the facility. As an example, initial reactive actions for all areas could be listed. In addition, for the IMT – strategic considerations for setting the priority for evacuating the various patient populations could be captured in a decision support tool to assist in a full facility evacuation. Other functions that warrant specific attention include areas where patient procedures are conducted: Operating Rooms and Cardiac Catheterization Labs and similar areas should have service-level guidance in place that facilitates decision making during an emergency (thus promoting consistent action that protects personnel and patients).

- Specific patient evacuation procedures and routes should be clearly delineated. How the patients are evacuated (walk, carried, use of specific equipment) should be delineated. Routes of evacuation, which will also vary by geographic area, should be well described with alternatives listed. This requires coordination among different areas to avoid "bottleneck" phenomena from occurring, and addressing this may be assigned to the evacuation task force. For example, securing of facility elevators may be necessary if they are usable to promote orderly evacuation and prioritization of patients (e.g., elevators may be reserved for non-ambulatory patients while ambulatory patients may be assisted down stairs).

- Critical equipment and medications that should be evacuated with patients should be listed. This will vary by functional area and whether the evacuation is emergent or is conducted over time.

- Patient records should be moved with patients if possible. Records that should accompany the patient will vary depending on whether the evacuation is emergent. This issue should be addressed during continuity preparedness planning, particularly if electronic medical records are used and can be accessed from an offsite location. Procedures for keeping the records with the patient during evacuation should be addressed.

- Rally points for personnel, patients and visitors from specific facility areas (with alternates) should be designated. These are safe, interim locations that may differ from ultimate destination and are meant to merely provide a chance for accountability prior to moving to a more definitive evacuation or shelter location. Rally points should be clearly delineated and provided in a map as an attachment to this support annex.

Rally points serve as temporary staging areas for staff and patients to conduct accountability prior to further movement to a more definitive location.

- Formal procedures to maintain accountability for patients, staff, and visitors should be addressed. This can be challenging and should include accountability for patient families, residents, medical students, private physicians, administrators, housekeeping staff, as well as many others. Some facilities have utilized methods in which doors to rooms are visibly marked after they have been cleared of all persons during evacuations. Having telephonic and web site check-in procedure that can be accomplished through mobile devices may assist in confirming evacuation of those not documented at the rally points.

- Alternate treatment, management and support sites should be delineated. Procedures to select and establish alternate sites for staff and patients should be provided. This may include the use of adjacent facilities or outdoor areas. Weather conditions are an important consideration for staging patients and staff outdoors.

- Integrating with community resources. Procedures specific to evacuation or shelter-in-place for coordinating with community assets (private and public sector) should be established in advance. For example, how will patient transportation occur if this becomes necessary?

- Patient final destinations. Final destinations for patients may require the activation of jurisdictional, regional, or State mutual aid systems. Processes and procedures for contacting and coordinating with the appropriate authorities should be described. Issues such as the transfer of responsibility of caring for patients, third-party payer coverage, and others should be addressed during preparedness planning. If mutual aid instruments exist among healthcare organizations in a community, these might be referenced here and/or included as an attachment to the annex. Alternatively, the annex could delineate procedures for requesting beds at outside facilities.

- Personnel left behind after evacuation. In specific situations, some personnel may be designated to stay behind to secure or to maintain the facility. Specific guidelines for when they, too, should leave may be important to have developed and clearly communicated.

- Public information announcements. Announcements to the general public (usually through the media) should be developed to clearly communicate the status of the facility, its personnel, and patients. Wide dissemination of the closed status for the facility may diminish self-referral of patients seeking care but are unaware of the facility compromise.

  It may also be beneficial to include contact information for how families of staff and patients can check on their loved one's welfare. A call center could be established for this purpose. Alternatively, announcements sent to patient emergency contacts can be undertaken.

- Demobilization: Specific procedures for demobilization will often be difficult to ascertain, since the duration of evacuation from the facility can vary.

- Recovery: The recovery requirements can also vary significantly based upon the incident impacts, from little action to a complete hospital rebuilding. The recovery process includes not only the physical restoration of the healthcare facility, but also the return of patients and the resumption of normal healthcare services. This will require a complex series of actions: The facility must be restored to a fully functional status, patients and staff returned and backlogs addressed. The public must be made aware of the resumption of healthcare services, public confidence must be restored, and levels of patient activity should return to at least the pre-incident level. Special attention should also be given to the financial considerations for the facility, including pursuit of potential avenues for financial assistance. The value of having pre-plans for restoring mission critical services and assets, having a list of priorities for recovery actions, and other guidance becomes clear.

- Attachments to the Annex: Some attachments may serve as helpful tools for this annex. Examples include:
  - Evacuation maps.
  - Rally point maps.
  - Locations of specific equipment (e.g., flashlights, evacuation equipment, such as stair chairs).
  - Mutual aid/cooperative assistance instruments relevant to obtaining outside resources for evacuation.

Healthcare System EOP Appendices: Service Level Guidance

Medical and healthcare service delivery, and all the necessary direct and indirect activities that support healthcare services, take place at the level of operating units within the healthcare organizations. "Service level" is used as the designator to emphasize that this guidance covers a day to day functional service that normally manages the coordination of its individual, geographically distinct areas within the healthcare organization. For example, imaging services (x-ray, ultrasound, MRI and other elements of the usual Radiology service) may be scattered in multiple areas of a facility, but the radiology service level plan directs and coordinates all elements of that service.

There may be utility in documenting summary response guidance for an individual operating unit in one location that is easily accessible by personnel staffing that unit. That would be an extension of the service level guidance. The service level planning provides the necessary interface between the Incident Management Team and the personnel who perform roles based from the usual service areas within the healthcare organization.

The EOP Service Level Plans provide information specific to specific operating units that are organized under a day to day service leadership.

Service level entities may be classified into broad categories, with multiple service level plans within each category.

- Clinical services: Emergency services, medical-surgical units, and others.
- Clinical support services: Pharmacy services, social services, medical records, health information systems and others.
- Business services: Administrative services such as admissions, billing and financial services, medical staff services, and others.
- Infrastructure services: Facility engineering, housekeeping services, and others.
- Police and Security: Law enforcement and security services.

In summary, **service level plans are concise guides for response and recovery actions for specific operating units that function under a single service leadership.**

Service level guidance can be one of the most valuable components of an EOP as they should contain almost all job aides and check lists for personnel positions at the operating unit level.

Service Level Guidance Template

A wide range of formats have been used for these service level instruments. Generally, the format and terminology should be identical across the organization, and the standard guidance elements should be available for each service to conserve development efforts and promote consistency.

This text promotes a template that follows the general layout for the EOP Base Plan and annexes, but in an abbreviated format. Each service level instrument may be organized according to the following scheme:

- The general role of the service: A brief description of the service's everyday roles and responsibilities within the healthcare organization, to provide context.

- The role(s) of the service in emergency response & recovery: A brief description of the major roles the service may perform within the larger organization. This includes a statement emphasizing the importance of sustaining the service's usual operations and maintaining a safe environment for staff and patients. It then briefly describes other roles that it anticipates being tasked to perform during emergencies.

- Guidance for integrating into the larger organizational response: This section is equivalent to a base plan, providing guidance for interfacing with the Incident Management Team. It includes:

    - IMT supervisory position: Guidance for which IMT response position the service unit would typically report to and receive direction from.

    - Reporting guidance: Templates for constructing reports and guidance for the submission method (electronic, paper, and other) should be included. For example, a template and method to transmit a brief situation and resource status report is important (i.e., a method to relay the units' status, such as "operating normally", "challenged due to surge or continuity issues", or Occupant Emergency Procedures activated.").

    - Mobilization guidance: Call back lists and other methods for readying the service for its roles in the incident.

    - In addition, general safety and security information could be included such as the need to wear photo IDs at all times during emergency response.

- Support Annex guidance: Relevant support annexes and their checklists that have been developed for service level (e.g., checklist for utilizing emergency communications technologies, checklists for furnishing available personnel for a common labor pool, etc.).

- Incident-specific/hazard-specific guidance: These would typically take the form of operational checklists. Examples include:

- Occupant Emergency Procedures, such as evacuation and shelter in place instructions providing step by step instructions for the service level personnel.

- Tornado (or potential explosive incident outside facility) which outlines rapid steps to relocate staff and personnel to safe pre-designated spaces internal to the building.

- Electrical power outage instructions and the necessary accompanying continuity actions necessary (e.g., for clinical departments, immediate evaluation of all patients connected to any electrically powered devices)

- Water outage instructions and the necessary accompanying continuity actions such as water conservation steps and access to potable water for staff and patients.

- Surge capacity guidelines which outline service volume increase activities such as patient tracking requirements, alternate patient placement (e.g., hallways), reduction in patient documentation requirements (at least initially), triage of diagnostic studies and others.

Lesson 1.5.5 Resource Management Overview

Lesson objectives

- *List the 5 principles that NIMS describes as critical to resource management and how they relate to preparedness activities.*
- *Define resource typing and certification processes.*
- *List critical response resource processes that should be addressed during preparedness.*

Introduction

Resource management is a key activity that takes place both prior to and during emergencies and disasters. Resources may be characterized as personnel, equipment, supplies, and facilities. Much of response guidance generally focuses upon resource management during response. This cannot be successful without comprehensive **resource management being addressed during preparedness.**

Resource management is traditionally described as a response activity. Significant efforts during preparedness must be conducted to ensure it is effective and efficient.

- Key principles: As traditionally presented in NIMS[290] and its predecessor ICS guidance, resource management involves five key principles which underpin effective resource management. They have been variably described between the NIMS versions and other documents, but generally consist of the following key points:

  1. Planning: Preparedness organizations work together in advance of an incident to "develop plans for identifying, ordering, managing, and employing resources."[291] The process for selecting resources to receive this focus should be informed by the HVA, so that all mission critical resources will be available when needed for emergencies.

  2. Use of agreements: Pre-incident agreements among all parties providing or requesting resources are necessary to enable effective and efficient resource management during incident operations. Formal pre-incident agreements that may be useful for healthcare organizations include mutual aid and cooperative assistance instruments and contingency contracts. At the jurisdiction and State levels, the Emergency Management Assistance Compact (EMAC) may be a useful compact for

Resource management may require the establishment of certain agreements during preparedness. These include emergency contracts, mutual aid agreements, and cooperative assistance agreements.

[290] Adapted from: U.S. Department of Homeland Security. *National Incident Management System*. (December, 2008). Washington, DC. pp. 32-35; accessed December 6, 2009 at: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf.
[291] Ibid, page 33.

obtaining necessary resources for healthcare emergencies.[292]

Resource typing provides a classic example of the efforts that are required during preparedness to ensure that resource management occurs effectively during response.

3. Categorizing resources: Resources should be objectively labeled. This makes the resource ordering and dispatch process within jurisdictions, across jurisdictions, and between governmental and nongovernmental entities more efficient and increases the likelihood that response organizations receive resources appropriate to their needs. Facilitating the development and issuance of national standards for "typing" resources (see terminology textbox) and "certifying" personnel (see terminology textbox) is the responsibility of the National Integration Center (NIC)[293] described in Chapter V of NIMS. In the NIC's scheme, resources are organized by category, kind and type. Generally, the resource category relates to the response discipline with which the resource is associated. The National Integration Center has created the "Health and Medical" category for many of the typed resources related to healthcare. A national typing of health and medical resources has been conducted through a joint initiative of DHS and DHHS, but the described resources for medical response are relatively large teams configured for emergency response.[294] These resources generally are not available in most locations. Resource typing of everyday medical resources has not yet been published. Local and State efforts at resource standardization have occurred in some jurisdictions.

4. Resource identification and ordering: Standardized, established processes and methodology are used to order, identify, mobilize, dispatch, and track (during an incident) the resources during incident response. During an incident, these activities are conducted by the Logistics Section Chief, under the direction of the Incident Commander and in accordance with planning requirements.

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[292] EMAC web site accessed April 18, 2010 at: www.emacweb.org/

[293] National Integration Center is the area within the Federal Emergency Management Agency (FEMA) charged with overseeing the implementation and revisions of NIMS. More information is available, accessed February 23, 2010 at: http://www.fema.gov/emergency/nims/ResourceMngmnt.shtm#item4

[294] U.S. Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA). *FEMA 508-8 Typed Resource Definitions – Medical and Public Health Resources* (3/14/08); accessed April 12, 2010 at: http://www.fema.gov/library/file?type=publishedFile&file=medical_and_public_health_teams_final_combined__3_.pdf&fileid=6aa4f860-687d-11dd-a5d1-001185636a87

Terminology alert!

Resource typing: A classification of resources whether human or otherwise. In ICS, "type" refers to a designated resource's capability. Type 1 is generally considered to be more capable than Types 2, 3, or 4, respectively, because of size; power; capacity; or, in the case of incident management teams, experience and qualifications. Resource typing also involves categorizing the resource by its kind (e.g., what the resource is, snow plow, strike team, etc.). Therefore, resource typing involves designations of "kind" and "type."

Terminology alert!

Certification: Certification "entails authoritatively attesting that individuals meet professional standards for the training, experience, and performance required for key incident management functions."[295] In ICS, the term certification may also be applied to equipment and facilities (verifying the appropriateness and adequacy for the intended use).

5. Effective management of resources: Resource managers should use validated practices to perform key resource management tasks systematically and efficiently during both preparedness and response. During preparedness, acquisition, storing in a safe and accessible location while addressing temperature and humidity requirements, discharge/recharge of equipment, biomedical servicing, shelf-life issues and other requirements of healthcare resources must be addressed. During response, procedures should be standardized for ordering, mobilizing, and tracking resources, such as the assignment and tracking of vehicles and equipment.

Resource management incorporates the above principles and provides a uniform method for identifying, acquiring, allocating, and tracking resources within an organization. These should also be addressed at

[295] Part of the definition of "certifying personnel" in: United States Department of Homeland Security. *National Incident Management System Glossary of Key Terms. (2008), page 136*; accessed February 15, 2010 at: http://www.fema.gov/emergency/nims/

higher levels in the overall response, for jurisdiction-wide, State, regional and national levels so that adequate public health and medical response is facilitated.

The resource management principles should be applied to all major capability categories for healthcare systems. This suggests important resource management activities that could occur under mitigation as well as preparedness. Examples of this dual focus include:

- Mitigation planning: This activity, delineated in the EM program mitigation work plan (see Lessons 1.4.1 and 1.4.2), may identify short- and long-term resource-related actions (redundancy, acquisition and storage, and others) that will be accomplished to eliminate and/or reduce impacts from hazards on the essential resources for mission-critical.

- Continuity planning: This activity (see Lesson 1.3.3) ***identifies mission critical functions, systems, and processes*** from the HVA and develops a more detailed consequence analysis of the impacts of hazards on these mission critical areas. ***Resource analysis*** for **response to this type of hazard impact**, including resources necessary for **restoration and recovery** of mission-critical resources, should be included in resource management activities.

Preparedness Resource Management for Healthcare Systems

Within a healthcare system emergency management program, resource management can be a relatively complex undertaking. Given the wide variety of resources necessary, the complexity of medical equipment and supplies, the regulatory environment and financial restraints, this activity should be carefully organized and managed to achieve the best available resource inventory under the circumstances. A consistently applied resource process can assist in this endeavor.

- Identifying resource managers: Within the preparedness activities in the EM program, it is important to designate personnel who will identify, refine, and validate resource requirements for likely hazard incidents, and then assure that the resources are acquired and managed. For healthcare systems, this is an activity that is generally assigned to personnel who are addressing general preparedness issues for a specified EOP function. In larger systems, a formal **resource manager** may be designated. The resource-related preparedness activities are described below.

- Identifying resource requirements: This process involves accurately determining the necessary resource information.
  - What and how much is needed (based upon some scale).
  - Where (by geographic and/or functional designation) and when it is needed.
  - Who (by position designation) will be receiving or using it.

The requirements should be extractable from an analysis of a well written EOP section that describes the function being analyzed by the resource manager. In other words, the system description and concept of operation in the base plan, functional annex, or hazard- or incident-specific annex should be detailed enough to determine the resources needed to conduct that specific function. The resources may best be categorized as personnel, facilities, equipment and supplies. The quantities of each necessary for function at the intended capacity should be determined also.

In areas where formal resource typing at a national level has not occurred, accurate descriptions of each resource should be developed during preparedness.

- Characterizing the resources: Each resource on the list should then be carefully characterized by resource typing if possible. For resources where formal resource typing at a national level has not occurred, accurate descriptions of the resource should be developed during preparedness. Wherever possible, these resources must be designated by standard healthcare resource terminology. For unusual resources used primarily in emergencies, accurate descriptions should be developed by healthcare organizations. Ideally, this could be done as a common task by healthcare coalitions that may be sharing resources under extreme urgency, so that resource requests are accurately addressed. For personnel resources, especially for complex and/or key positions, competencies (see next lesson) should be developed.

Who is specifically authorized to request resources and how the requests are made should be well defined before any incident.

- Delineating the preparedness tasks for each resource: A brief analysis of each resource is then conducted to determine the preparedness issues specific to that resource. Generally the considerations for each category of resource are straightforward:
  - Personnel-related tasks:
    - Recruitment so that the necessary *initial* quantity of personnel for the designated position is likely to be available on all shifts on all days, or at least during the likely times that the resources are needed. Retention should always be considered at the same time recruitment is being addressed.
    - Instructional requirements for the personnel to achieve the

required competencies should be determined.
   - Equipment and supplies necessary for the safety of the personnel operating in the designated positions should be specifically considered to be sure this important issue is addressed.
   - Mobilization and demobilization tasks should be identified at this stage so they can be properly planned during later preparedness activities.

- <u>Facilities-related tasks</u>:
   - Each facility that is specifically for the emergency response function should be carefully described. Examples of common healthcare emergency facilities include the organization's command post/center or emergency operations center, decontamination facilities, alternate treatment sites, vehicle and equipment staging areas, and family assistance centers. The layout for each of these should be established, with the flow of personnel and patients. Adequate space between patients (or personnel in a management facility), space for smooth and safe patient transport, adequate emergency exits and other considerations should all be considered when selecting these facilities.
   - Safety, privacy, regulatory issues in the emergency context should be considered for facilities, particularly those involving patients. For example, same sex privacy for patient care areas such as decontamination spaces where indicated, adequate air flow and temperature/humidity control in alternate treatment sites, adequate hand washing or hand sanitizing equipment/supplies, and others. Some of these considerations may lead to mitigation/safety measures being recognized. Examples include replacing standard electrical outlets with ground-fault interrupted outlets for potential alternate treatment sites, and placing areas of the facility on the back-up power grid so they can function as an emergency response facility even if regular power fails. For management facilities, noise considerations and the needs for private or secure conversations should be addressed in facility design.
   - Equipment and supplies needs for the emergency facilities should then be delineated.
   - "Storage" and mobilization requirements should be developed.

- <u>Equipment/supplies-related tasks</u>:
   - As with facilities, the exact specification for the equipment and supplies should be captured, and tagged with the most accurate description per national or local resource typing guidance.

- "Storage" and mobilization requirements should be developed. This includes and analysis of how rapidly the resources must be made available, and determining storage methods that meet immediate response requirements.
- Any special requirements for accessing, mobilizing, using, and demobilizing the resources should then be addressed in training.

  For example, at one hospital in Washington DC that considered a no-notice, nearby chemical attack to be a significant hazard, a single set of personal protective equipment (PPE) was stored in a lock-box at each hospital entrance where security personnel could be stationed. All on-duty security personnel maintained keys, and operational level training was provided so they could be immediately protected upon recognition of a potential chemical hazard. A training course was developed and conducted to provide an operational level of proficiency in recognizing the potential hazard situation and taking immediate protective action for themselves and the facility.

- Sources for re-supply, for maintenance of facilities, equipment and supplies should then be determined and instruments/procedures established as noted above.

Concepts and Principles for Pre-Incident Healthcare System Resource Management

- In performing the above-described tasks, the following considerations emphasize the importance of focusing upon preparedness resource management:

  - <u>Promoting effective outside assistance</u>: It is unlikely that any healthcare system can depend entirely upon its own internal mechanisms to supply all resources it may need in an emergency. Effective resource management utilizes mutual-aid, cooperative assistance, contingency contracts and donor assistance to meet resource needs in the appropriate timeframes. This is enabled by the standardized classification of kinds and types of resources required to support the incident management organization, and by appropriate instruments to support the resource sharing.

  - <u>Credentialing or certification as a component of a resource</u>: Resource management may incorporate a credentialing system for personnel resources. The credentialing may be tied to uniform training and certification standards, licensure, and other

As healthcare systems consider resource management, it is important to evaluate potential credentialing requirements. This will be most acute with accepting outside assistance of personnel into the system.

qualification to assure that requested personnel resources will be successfully accepted and assigned to incident positions for which they were requested. Similarly, some resources may be certified to assure they meet adequate standards for the requested use.

- Coordination across multiple resource units in a large incident: Resource management coordination beyond the direct incident is the responsibility of EOCs and/or other multiagency coordination entities. This is outside the direct domain of the resource coordination being conducted by the specific Operations and Logistics Section elements of the IMT (e.g., the Resources Unit discussed in detail in Unit 2). Effective coordination between these entities requires established procedure and standardization. For example, if mission critical resources are not available through the IMT's Logistic Section, the IMT should have in place a mechanism to request the specific items through the local healthcare coalition and/or the local jurisdiction's EOC. The description of the item(s) and the ordering process should be fully standardized for maximum efficiency under incident conditions.

- Resources from all sources: Resource management personnel should be empowered to obtain and manage resources available through private sector and nongovernmental organizations as well as those available through public agencies. This is particularly important for medical resources during both preparedness and response, since many healthcare organizations are based in the private sector.

A variety of different activities can occur during preparedness to address resource management during response.

- Preparedness initiatives: A wide range of initiatives may be undertaken to prepare a response organization for optimal resource management during emergency response and recovery. Examples include the following:

  - Resource descriptions: As noted in the principles above, a uniform method for the description of resources during response that is consistent across organizations is essential but currently doesn't exist for healthcare resources. Healthcare personnel should, during preparedness, examine the potential kinds and types of resources that they will be in charge of managing and that they may need to request. If no resource description scheme is in use, processes should be established that promote simple, generic descriptions of each resource to prevent confusion during response.

  - Ordering, mobilization, tracking, dispatching, and demobilization protocols: Procedures should be developed that are used to request resources, prioritize requests, activate and dispatch resources to incidents, and return resources to normal status. Standardization within a response organization is essential, but standardization across the larger response community should also be sought. Request and acquisition procedures should be integrated with methods of verifying qualifications of personnel integrated from outside of the organization and the badging/privileging of these personnel to allow them to function within the organization during emergencies.

- Ordering processes: The processes and procedures for ordering needed resources during response should be well delineated during preparedness. These include:

    - Position: The responsibility for ordering resources within an organization should be clearly designated. ICS lists specific positions that can do this (IC, Logistics Chief, and as appropriate, the Supply Unit Leader – see Units 2 & 3 for descriptions). Healthcare systems should have pre-designated positions that are assigned this responsibility.

    - Needs identification: Identifying what needs to be ordered requires constant evaluation of response efficiency. The methodology for this determination is a critical preparedness point to address.

    - Process: The specific process for resource ordering should be pre-established. This entails not only locations or organizations that resources can be requested from but the manner in which the request will be made. Specific information to be listed on the resource request should be established. This can prevent confusion, delays in receiving the resource or receipt of an inappropriate resource.

    - Authority for high commitment resource decisions: Parameters for resource ordering may be established, with resource ordering beyond these criteria requiring additional authorization. Factors such as cost, liability exposure, and public image are some considerations that may require input or agreement from senior executives above the organization's Incident Management Team. Procedures for rapidly accessing the designated executive(s) for these decisions should be established.

- Mobilization processes: Specific procedures and processes for mobilization of assets should be described. These should

Who is specifically authorized to request resources and how the requests are made should be well defined before any incident.

Resource management includes attention to the early demobilization of resources when they are no longer needed. This important concept can contribute to the resiliency of the organization, particularly healthcare organizations.

include assets that originated within the organization as well as assets that have arrived and been accepted from external to the organization. For example, a defined personnel check-in process helps to provide accountability of personnel resources. A defined method for receiving and cataloging all outside equipment and supplies should also be established. Both should be coordinated with perimeter control process.

- Tracking processes: Tracking of resources and their status should be occurring continuously during response. ICS designates three categories to all resources: assigned; available; out of service.
  - As resources are assigned, they come under the direction of the function or more direct supervisor that is designated in their assignment.
  - Appropriate procedures and resource management information systems for tracking these assigned resources should be pre-established. Tracking includes quantities, location, and status. Tools should be developed that enhance information flow and maintain accurate real-time data during the fast-paced and changing environment of incident response. Examples include geographical information systems (GIS) resource tracking systems, transportation tracking systems, inventory management systems, and reporting systems. Ongoing evaluation of resources during incident response using these mechanisms can have tremendous importance as this helps to shape the strategies for achieving objectives. Tracking is also important for resource evaluation.
- Dispatching processes: If a medical center or other medical facility is dispatching assets outside of its immediate location, a process for dispatch, constant communication, and any necessary support should be established.
- Demobilization processes: Process for rapid rehabilitation and restoration to a readiness state for all resources should be addressed during preparedness. This can include processes such as the medical evaluation of responders exposed to unusual hazards, identifying vendors to rapidly clean and service equipment, or contracting with HAZMAT services to evaluate a healthcare facility for residual contamination and declare it “clean,” depending on the nature of the incident. Final evaluation of resources, financial accounting, and

compensation for resources should be initiated during demobilization if not accomplished during response.

- <u>Maintenance of a resource cache (storage)</u>: Many items necessary for effective healthcare system response must be acquired and maintained in a cache that is immediately ready for mobilization. A key of aspect cache maintenance is the inventorying process. As described in NIMS, this is "determining whether or not the primary-use organization needs to warehouse items prior to an incident. Resource managers make this decision by considering the urgency of the need, whether there are sufficient quantities of required items on hand, and/or whether they can be produced quickly enough to meet demand. Another important part of the process is managing inventories with shelf life or special maintenance considerations. Resource managers must build sufficient funding into their budgets for periodic replenishments, preventive maintenance, and capital improvements."[296]

  Textbox 1.5.5.1 summarizes the important concepts related to stored equipment and supplies.

Textbox 1.5.5.1

Storage Issues for Equipment, and Supplies

- Immediately available location.
- Clean, dry, controlled temperature, humidity and possibly light for some medications and equipment.
- Secure but rapidly accessible to appropriate staff.
- Enough space to be able to access all aspects of the stored cache rapidly.
- Equipment and supplies exact location in the storage area mapped onto an available location finder.
- Electrical source for maintaining charged batteries.
- Plan and schedule for:
  - Charging/discharging batteries as indicated by battery type.
  - Rotation of batteries with everyday stock if possible.
  - Rotation of medications and equipment with everyday stock if possible, so that shelf life and cache maintenance is distributed evenly with the everyday equipment.
- If a training cache is developed, it should be clearly marked as "training." It should be stored in a similar manner so that

[296] United States Department of Homeland Security. *National Incident Management System, Component III Resource Management*. (2008), page 33; accessed February 15, 2010 at: http://www.fema.gov/emergency/nims/

mobilization/demobilization training is accomplished to some degree with each use of the training cache.

- Reimbursement: Reimbursement provides a mechanism to fund critical needs that arise from incident-specific activities. Processes and procedures must be in place to ensure that resource providers are reimbursed in a timely manner. These must include mechanisms for collecting bills, validating costs against the scope of the work, ensuring that proper authorities are involved, and accessing reimbursement programs, such as the Public Assistance Program[297] and the local or state jurisdiction's mechanisms for reimbursement through the Stafford Act.[298] Accurate documentation is a critical requirement of the entire reimbursement process.

- Community resource assessment in resource management planning: Many community resources should be considered during the healthcare system preparedness activities related to resource management. These include:

  - Resources from other healthcare organizations: These are ideally addressed through a healthcare coalition[299] and its resource sharing instruments (mutual aid or other).

  - Resources from usual vendors: These may be addressed through modification to existing contracts, with additional procedures to contact the vendors during non-business hours if the vendors' resources may be needed on very short notice. Work should be conducted through venues such as local or regional healthcare coalitions to identify potentially scarce resources that may be

[297] The Public Assistance Program provides supplemental federal disaster grant assistance for the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The state determines how the non-Federal share (up to 25%) is split with the applicants. Information accessed April 28, 2010 at: http://www.fema.gov/government/grant/pa/overview.shtm

[298] The *Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-707* provides mechanisms for Federal reimbursement to States and localities for disasters designated with a federal declaration. Funding may be available for not-for-profit healthcare organizations with carefully documented expenses incurred from the declared disaster. Information accessed April 28, 2010 at: http://www.fema.gov/about/stafact.shtm

[299] Barbera JA, Macintyre AG *Medical Surge Capacity and Capability: The Healthcare Coalition in Emergency Response and Recovery.* CNAC under contract to the US Department of Health and Human Services (May 2009), accessed April 28, 2010 at: http://www.remm.nlm.gov/MSCC_Healthcare_Coalition_May_2009.pdf

available from only one vendor and counted as a back-up by all healthcare organizations. Spare ventilators, blood products, and agency workers are three examples of potentially scarce back-up resources if several facilities need resource assistance at the same time.

- Resources from other vendors: Emergency or contingency contracts may be established with some vendors so that the healthcare organization receives priority service when requesting resources under emergency conditions. Resources such as additional generators and potable water may rapidly become very sought-after commodities by many types of organizations after a hazard impact, and the healthcare organizations should agreements in place to assure that they receive priority for mission-critical resources.

- Resources from non medical organizations: Arrangements may be made with nearby organizations such as universities, manufacturing plants, or government facilities to request and receive resource assistance during emergencies. This may be established through contracts or through mutual support instruments ("mutual support" is differentiated from mutual aid since it is between unlike organizations).

- Resources from local and State agencies: Public health, fire and EMS, law enforcement and emergency management agencies are increasingly recognizing the importance of supporting healthcare organizations during emergencies and disasters. A wide range of resource support may be available. This potentially includes volunteers through the Medical Reserve Corps[300] or a local CERT.[301] National Guard resources may also be available through the State authorities.

- Resources from Federal civilian sources: A wide variety of resource materiel is potentially available from the Federal government during emergencies and disasters. These include the Strategic National Stockpile,[302] Disaster Medical Assistance

[300] Office of the U.S. Surgeon General. *Medical Reserve Corps*. Office of the Civilian Volunteer; web site accessed April 28, 2010 at: http://www.medicalreservecorps.gov/HomePage

[301] Citizen Corps. Community Emergency Response Teams (CERT), web site accessed April 28, 2010 at: http://www.citizencorps.gov/cert/about.shtm

[302] US Centers for Disease Control and Prevention. *Strategic National Stockpile (SNS)*. Office of Public Health Preparedness and Response (OPHPR); web site accessed April 28, 2010 at http://www.bt.cdc.gov/Stockpile/

Teams,[303] medical equipment and supplies from UASI programs,[304] and other healthcare and non-healthcare related initiatives. Almost all of these are available primarily through local and State government agencies, emphasizing the importance of healthcare coalition development and its operational relationship with government agencies. The US Department of Veterans Affairs medical centers also actively participate in local and regional healthcare preparedness.

- Resources from Department of Defense (DoD): Generally, these resources are only available through State-to-Federal mechanisms. There are two potential avenues, however, for accessing military resources outside of this process. One is through the inclusion of geographically proximate military facilities that become members of the local healthcare coalition. Within the constraints of DoD priorities (National Security and military missions), these facilities may participate in resource sharing when the coalition is activated for emergencies. The District of Columbia Emergency Healthcare Coalition is one example of this construct, with three DoD healthcare facilities plus the VA Medical Center as participants.[305] The other local avenue for DoD resources is through the local military commander's authority to provide support to civil authorities under extreme circumstances.[306] This would be obtained through the local or State authorities' request to local DoD command. Understanding the contact points for this, plus the parameters for assistance and therefore the information that should be included in the request, are important preparedness considerations.

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[303] US Department of Health and Human Services. *Disaster Medical Assistance Teams (DMAT).* Assistant Secretary for Preparedness and Response, web site accessed April 28, 2010 at http://www.hhs.gov/aspr/opeo/ndms/teams/dmat.html

[304] US Federal Emergency Management Agency. *FY 2009 Urban Areas Security Initiative Nonprofit Security Grant Program (UASI-NSGP)*, web site accessed April 28, 2010 at: http://www.fema.gov/government/grant/uasi/index.shtm

[305] Higdon MA, Shin P, Stoto MA. *Baseline Evaluation of the DC Emergency Healthcare Coalition* (June 2008);accessed April 28, 2010 at: http://www.law.georgetown.edu/oneillinstitute/documents/2008-06-11_DC_Baseline-evaluation-report.pdf

[306] Buchalter AR. *Military Support To Civil Authorities: The Role Of The Department Of Defense In Support Of Homeland Defense (2007).* Federal Research Division, Library of Congress; accessed April 28, 2010 at http://www.loc.gov/rr/frd/pdf-files/CNGR_Milit-Support-Civil-Authorities.pdf

Resource Management Preparedness: A Checklist

A resource management checklist is presented for consideration during healthcare system preparedness planning.

Preparedness phase: Categorize resource management issues according to the methods for how resources will be obtained during the mobilization stage of response:

- In-house resources:
  - Personnel for potential assignment to emergency response and recovery positions:
    - Establish competencies and qualifications for positions.
    - Recruit personnel with necessary prerequisite qualifications.
    - Develop instructional material that achieves the proficiency levels for the target competency sets.
    - Conduct primary and refresher training to maintain the desired competency levels.
    - Develop guidance for individual and family preparedness to establish and maintain personnel availability.
  - Facilities and equipment:
    - Materials acquired.
    - Constructed/assembled and equipped.
    - Stored and maintained in a ready state for mobilization.
    - Serviced as indicated during storage.
    - Mobilization guidance developed.
    - Response guidance developed.
    - Demobilization guidance developed.
    - Training cache developed and maintained (e.g., clearly labeled as “for training only”).
  - Supplies:
    - Acquired.
    - Stored in a ready state and other issues noted for facilities and equipment.
    - Shelf-life management: rotate through usual stock if possible, or rotate through suppliers stock; budget and plan for replacement as indicated.
    - Training cache for any unusual medication (e.g., medication delivery systems such as auto-injectors).
- Outside “just-in-time” resources:
  - Mechanisms and the authorizing/supporting instruments for rapidly acquiring resources from other entities as response is activated:
    - Mutual aid and/or mutual support instruments established (resource assistance upon request, unreimbursed unless

specifically stated otherwise)

- Cooperative agreement instruments established (resource assistance provided with reimbursement for costs)
- Contingency contracts developed (contracts for resources that can be activated when an emergency need for the resources arise).
- Systems for volunteer recruitment, processing and management during response:
- Recruitment processes established for directed requests (such as now commonly occurs in Snow Belt States when hospitals ask for drivers with 4-wheel drive vehicles to assist staff in getting to and from work).
- Processes developed for
  - Receiving volunteers.
  - Processing and registering volunteers
  - Issuing assignments and providing briefing on tasks and responsibilities.
  - Credentialing as indicated by task assignments.
  - Making assignments to a specific task supervisor.
  - Badging for site access and function as indicated.
  - On-site training (as appropriate) and equipping as indicated for both safety and job efficacy.
  - Deploying to task site.
  - Tracking during response, with a “trouble desk” function if problems with/for volunteers during response.
  - Evaluation of performance.
  - Reassignment as tasks are completed.
  - Demobilizing and out-processing (return badges, receive feed-back from volunteers, address medical and psychological issues and arrange after-care, obtain contact information for any surveillance or medical follow-up, and thanking volunteers for their service).
  - Addressing post-response issues as indicated.

Lesson 1.5.6 Personnel Resource Management: The use of competencies

Lesson Objectives

- *Define the term "competency" and describe the use of competencies in personnel resource management in a comprehensive emergency management program.*
- *Describe the "layered" approach to competencies in the healthcare system competency framework, and explain how this is applied in the EM program.*
- *Define and explain the use of proficiency levels in emergency response and recovery competencies in relation to the healthcare system EOP function.*

Introduction

Personnel resources within healthcare systems may be categorized according to their projected tasks during emergencies and disasters:

1) Individuals recruited, trained and rostered to staff emergency response positions that differ in a significant way from the individuals' everyday job tasks.
2) Personnel that perform within their usual job positions in the healthcare organization or that assist in jobs (such as transport) that do not require additional education and training other than new reporting methods.

The personnel resource sections of this text focus upon the first category. Assuring a sufficient number of personnel with adequate competency to operate within the positions they will staff is one of the most time and effort consuming elements of a comprehensive emergency management program.

Recognizing an organization's personnel as a formal response resource that needs careful attention throughout the emergency management cycle can promote a more objective approach to personnel preparedness.

- Quantity of personnel resources for emergency response and recovery positions: If the organization's Emergency Operations Plan (EOP) is comprehensive and of sufficient detail, the quantity of personnel resources needed to staff the positions at any given time should be easy to determine. It then becomes important to assure *as much as possible* that adequate numbers of trained personnel will be available. This requires an analysis to determine how many personnel are necessary to initiate operations at any given time (days, evenings, nights, weekends and holidays), and how many additional personnel can arrive within an acceptable projected time interval to staff the additional positions for the Incident Management Team and its response resources to effectively manage the emergency.

Response and recovery competencies provide the format for describing the personnel's knowledge, skills and abilities required to maintain system operations during emergencies and disasters.

Qualifications of personnel resources for emergency response and recovery positions: The knowledge, skills, and abilities of personnel to adequately function in assigned emergency response and recovery positions should also be determined from an analysis of the EOP and the described positions, with input from relevant subject matter experts and literature resources as indicated. Unfortunately, this is commonly not the case, or the emergency response and recovery job descriptions and relevant qualifications are only generally described.

As discussed in Lesson 1.1.3, qualifications include both pre-requisites for a position and the knowledge, skills and abilities to meet the performance requirements for the position. The most robust approach to delineating performance requirements is through the use of carefully developed "competencies." Since emergency management in healthcare systems is not the primary organizational mission, emergency response and recovery **competencies** are the most effective tool for assuring that the knowledge, skill, and abilities for response and recovery are clearly defined and understandable. This lesson provides a background and a framework for the competencies.

The Role of Competencies in Personnel Resources Management

Competencies were originally established to characterize knowledge, skills, and abilities relevant to a specific position and aligned with the organization's objectives.

The concept of competencies (see terminology textbox) and competency modeling both originated in business management research. The purpose and construct of competencies have evolved extensively over the past 30 years as other disciplines began adopting the practice.[307]

- Historical purpose for competencies: The original intent of competency identification and development was to enhance the then common "job/task analysis" by **relating a position's requisite knowledge, skills and abilities to the overall objectives of the organization** in which the position existed. This approach aligns the objectives (i.e., desired outputs) of individual and team jobs/responsibilities with overall goals and objectives of the organization, such that organizational mission and objectives are achieved through effective individual and team performance. This critical attribute is essential for differentiating a job's competency set from a straightforward job description or job analysis.

- Competencies and individual jobs: Competencies describe specific elements that contribute to effective job performance within the

[307] Newsome S., Canto V.M., and Day A.L. *Leader Competencies: Proposing a Research Framework* (2003). Canadian Forces Leadership Institute; Kingston, ON.

context of a job's responsibilities. Each **job or position competency is further delineated as some combination of knowledge elements, skills, and abilities that are objective and measurable (i.e., demonstrable) on the job**. Response competencies must be detailed enough to be objective and measurable on the job, under emergency or simulated emergency (exercise) conditions.

- Competencies and the organization: In the aggregate, the competencies of all key jobs describe *the overall position requirements within the responding Incident Management Team* to achieve the objectives of the organization.

For a competency to provide maximum usefulness to an organization, it should provide information relevant to the position that is measurable: an objective observer would be able to discern whether the individual possesses the skill, knowledge, or ability to meet the defined competency.

Terminology alert!

Competency: A specific knowledge element, skill, and/or ability that is objective and measurable (i.e., demonstrable) on the job. It is required for effective performance within the context of a job's responsibilities and leads to achieving the objectives of the organization.[308]

The competency framework

To completely describe a complex emergency response position, a very challenging number of competencies may be necessary. It is therefore important to develop a competency framework such that the competencies can be organized and presented in a logical manner. The framework should group jobs with similar basic competencies so they make sense and are optimally applicable across similar organizations. The competency framework that achieves these parameters and developed for the US Department of Veterans Affairs, Veterans Health Administration, is presented here. This competency framework is based upon an extensive literature search, both historical and current. Furthermore, it was evaluated and judged as valid by a panel of experts, and has been extensively applied with favorable feedback.[309]

[308] Adapted from Barbera J.A., Macintyre A.G., Shaw G.L., Seefried V., Westerman L., DeCosmo S. V*HA-EMA Emergency Response and Recovery Competencies: Competency Survey, Analysis and Report*, accessed August 12, 2009 at www.gwu.edu/~icdrm

[309] Barbera J.A., Macintyre A.G., Shaw G.L., Seefried V., Westerman L., DeCosmo S. *VHA-EMA Emergency Response and Recovery Competencies:: Competency Survey, Analysis and Report (2005)*, accessed August 12, 2009 at: www.gwu.edu/~icdrm

__Competencies associated with the EM program should be distinguished from day-to-day organizational competencies and should also be established within the appropriate context (e.g. preparedness versus response competencies).__

- Competencies oriented to context: Since the healthcare emergency management program is structured according to Comprehensive Emergency Management (CEM), the competencies should be structured accordingly. Emergency management competencies may therefore be classified as "program competencies" related to managing the EM program and performing in the mitigation and preparedness phases of CEM, and emergency response and recovery competencies that address the response and recovery phases of CEM.

    - Emergency response and recovery competencies: These competencies are defined in the context of emergency and disaster conditions and the relevant response system, which is delineated in the organization's emergency operations plan (EOP). This distinguishes emergency response and recovery competencies from those associated with everyday job requirements. This essential concept highlights the importance of having a clearly defined incident command system integrated into the EOP, which delineates the critical positions that operate the incident response during emergencies and disasters.

    - Individual readiness competencies: These are a special subset of response and recovery competencies that address personal readiness, family readiness, and professional readiness for the job groups or specific job position to which the competency set applies.

    - Program competencies: The EM program competencies are distinct and focus upon the knowledge, skills and abilities needed to successfully manage and conduct required EM program activities during mitigation and preparedness phases. They are much more in line with standard competencies related to effectively running meetings, conducting training, performing evaluations and achieving organizational learning. As a result, these are most detailed for emergency managers and healthcare system administrators.

__The use of primary and supporting competencies can organize an otherwise overwhelming list and demonstrate relationships between individual competencies.__

- Primary and supporting competencies: In developing a comprehensive list of competencies within each competency set, the total number of competencies may appear overwhelming. It becomes difficult for the reader to quickly comprehend the overarching range for that competency set, or to discern if any specific competencies have a higher priority. The competency framework addresses this issue through the use of "primary" and "supporting" competencies. The primary competencies provide the overarching knowledge, skills and abilities for the specific competency area, and should relate to the organization's objectives. The relevant supporting competencies provide the "objective and measurable" elements for each primary competency: The successful demonstration of the supporting competencies provides the demonstration of mastery of the primary competency.

- Progressive "layers" of job groupings within the competency framework: A large number of positions from across the healthcare organization have specific jobs within a major emergency response. "Grouping" jobs organizes them into categories with like performance characteristics (i.e., those having similar or closely related responsibilities/functions) and thus sharing common competencies. A job grouping strategy should make the competency framework useful to systems development, in part by demonstrating the relationship between day-to-day jobs within the organization and the likely positions to which the personnel may be assigned during emergency response and recovery. It also makes the competency application easier, since specific competencies may apply to many different jobs. In this competency framework, the job group levels are:

Competencies can be used to demonstrate a "layering" of emergency management job groupings.

  - All personnel: "All personnel" are defined as any healthcare system administrator, employee, professional staff, licensed independent practitioners or others with a specified role in the healthcare systems emergency operations plan (EOP). This competency set presents the knowledge, skills, and abilities that all personnel within a healthcare organization should possess to operate efficiently during response and recovery. A succinct example is to understand how they might be notified of EOP activation.

  - Job groups: This level categorizes day-to-day jobs by like characteristics important to emergency management, such that all regular jobs in the organization are assigned to a job group category. In healthcare systems, these job groups are:

    - Healthcare system leaders: Hospital and/or healthcare system-wide senior executives (CEO, COO, CFO), hospital-wide managers, department heads, nursing executives, chief of the medical staff, and/or senior managers in large departments or key operating units. It is assumed that members of this job group, due to their everyday organizational positions, would be assigned to serve in the command and general staff positions of an ICS structure during a healthcare system's emergency response.

    - Emergency program managers: Personnel primarily responsible for developing, implementing and maintaining healthcare facility and system-wide emergency management (EM) programs that include the Emergency Operations Plan (EOP). System level emergency program managers, above the level of individual facilities, (such as VHA Area Emergency Managers or program managers at the level of the VA Emergency Management Strategic Healthcare Group) are also included in this job group. It is assumed that the individuals in this job group will be assigned to a command & general staff ICS position (often planning section chief or senior advisor) during response, and so are expected to possess the response and recovery competencies listed under Healthcare System Leaders as well.[310]

- Patient care providers: Physicians, physician assistants, registered nurses, licensed practical nurses, nurses working within expanded roles (CRNA, RNP, and others), emergency medical technicians, paramedics, and respiratory therapists and others who provide direct clinical patient care. Not included are clinical support personnel that provide patient care services under the direct supervision of patient care providers: e.g., nurse’s aides, procedure technicians, orderlies, and others.

- Clinical support services: Personnel that perform tasks related to the medical care of patients without direct patient interface (e.g., pharmacists, lab technicians, etc.) or provide patient services that aren’t primarily medical care (social services, physical and occupational therapy, pastoral care, patient educators, and others) or provide patient care services under the direct supervision of patient care providers (such as nurse’s aides, procedure technicians, orderlies, transporters).

- Facility and engineering services: Personnel whose day to day job involves maintaining the physical plant and its various systems. Included in this group are facilities and physical plant personnel, engineers, grounds personnel, biomedical engineers, food services, communications and IT personnel. It also usually includes administrative safety positions below the level of the healthcare system leaders. Day to day duties rarely put these personnel in direct patient contact.

- Police and security services: Personnel whose day to day job in the healthcare system involves security and the full range of law enforcement activities. Day-to-day duties may or may not

[310] In some healthcare systems, an EM Program Manager may function in a more limited position (e.g. program coordinator) with a narrower range of competencies.

put these individuals into direct contact with patients.

- Emergency response and recovery function-specific competency groups: This third level of competency grouping is by ***functional*** elements as defined in the context of healthcare emergency response and recovery. For example, the normal context is department and unit based (e.g., Emergency Department, Administration, Engineering, etc.), which is not necessarily functional in emergency response based upon ICS (e.g., command, operations, planning, finance, logistics, and ICS sub-divisions, such as a healthcare services branch of operations). Other functional groups include response team functions. For example, both the IMT and a DECON Task Force draw personnel from multiple job groups to perform their multi-disciplinary functions.

- Individual jobs: These are specific jobs within the emergency response and recovery system.

- Grouping competency sets by job level: The competency sets at each level become progressively more specific, such that **competencies specific to a single position are the only ones not designated as part of a larger competency set**. Job groupings and sub-groupings therefore, in aggregate, cover all individual positions within the emergency response and recovery system in the organization. An example of the first layer of this job grouping strategy, applied to competency development for the Veterans Health Administration, is described in Textbox 1.5.6.1. The fully developed grouping strategy is provided in Exhibit 1.5.6.1.

Grouping competencies is an efficient methodology. The Competency set that all personnel should possess are defined first with more refined sets defined for specific job groups, functional groups, and specific positions.

Textbox 1.5.6.1

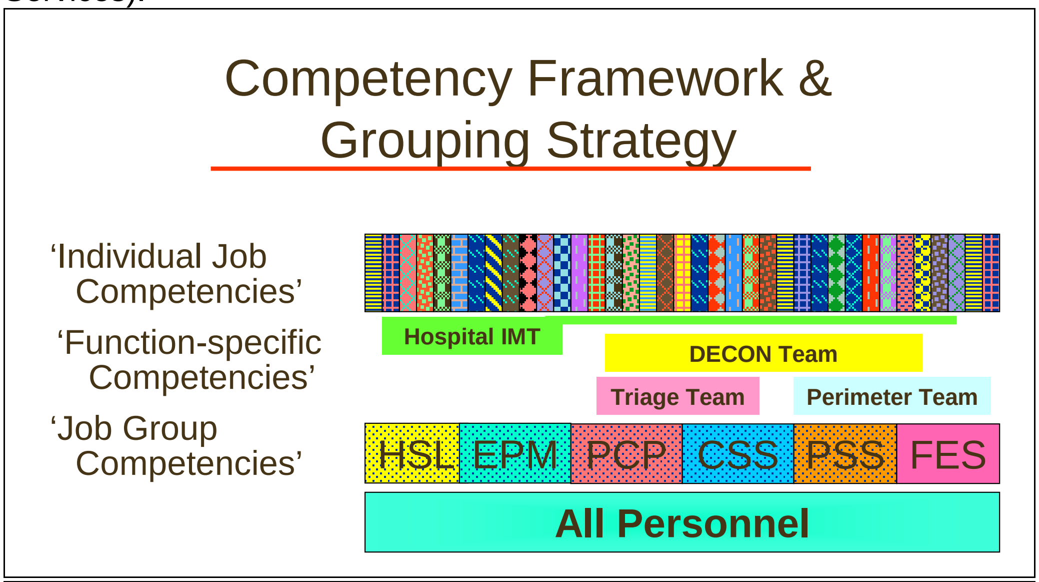
All Personnel Competencies within a comprehensive Competency Framework

The Veterans Health Administration extensively analyzed their emergency response and recovery roles and responsibilities. “All personnel” was defined as “any healthcare system administrator, employee, professional staff, licensed independent practitioners or others with a specified role in the healthcare systems emergency operations plan[311]” The project then defined the knowledge, skills and abilities required for all personnel who may have a role in emergency response and recovery.

[311] *VHA Emergency Management Program Guidebook* (2009). Chapter 9 –Education, Training and Exercises: Enclosure 9-5, accessed August 12, 2009 at http://www1.va.gov/EMSHG/page.cfm?pg=154

A comprehensive list of primary and supporting competencies was then developed for the “All Personnel.” The competency set includes 15 primary competencies, which are further described as “core competencies necessary as a base for every position within the organization[312].” Each of the core competencies is decomposed into multiple supporting competencies.

Exhibit 1.5.6.1. A competency grouping and layering strategy. HSL (Healthcare System Leaders), EPM (Emergency Program Managers), PCP (Patient Care Providers), CSS (Clinical Support Services), PSS (Police and Security Services) and FES (Facility and Engineering Services).



Defining levels of proficiency for specific competencies adds additional guidance for the organization’s personnel.

- Proficiency levels: Competencies may be further qualified by the **level of proficiency** (see terminology textbox) needed by a particular job or group of jobs. Many different proficiency levels have been promulgated, with most versions containing three levels. The levels of proficiency in this framework are presented in the following terminology textbox. The specific level of proficiency that is assigned to a competency for a job group, or for an individual job/position, is based upon the individual’s expected roles and responsibilities.

312 Ibid. Enclosure 9-5.

Terminology alert!	
Levels of proficiency: Proficiency levels delineate "The degree of understanding of the subject matter and its practical application through training and performance…." (FEMA, 2004).[313] The following levels were defined in the *VHA-EMA Emergency Response and Recovery Competencies: Competency Survey, Analysis, and Report*:[314]	
Awareness	Represents an understanding of the knowledge/skills/abilities encompassed by the competency, but not to a level of capability to adequately perform the competency actions within the organization's system.
Operations	Represents the knowledge/skills/abilities to safely and effectively perform the assigned tasks and activities, including equipment use as necessary.
Expert	Represents operations-level proficiency plus the additional knowledge/skills/abilities to apply expert judgment to solve problems and make complex decisions.

Competencies as a common denominator: Competencies, if properly constructed, become a "common denominator" that ties together the EOP documents, instruction, evaluation, and organizational learning. Competencies provide clear guidance for instructional design (see Lesson 1.5.7), clear metrics to measure performance against during exercise evaluation (see Lesson 4.2.4), and an effective method for implementing change in performance that can directly re-shape instructional courses.

Competencies developed within this competency framework may then be useful in personnel resource activities across the organization's EM

[313] FEMA. U*rban Search & Rescue Incident Support Team Training: Student Manual*. Module 1, Unit 4, p. 6: Planning Process Overview. n/a:40. April 16, 2004); accessed April 5, 2010 at: http://www.fema.gov/emergency/usr/usrist2.shtm http://www.fema.gov/pdf/usr/mod1_u4.pdf, accessed March 23, 2005.
[314] The report is available at: www.gwu.edu/~icdrm/, accessed August 12, 2009.

program: recruitment (by providing elements of position qualifications), training requirements and training development (competency-based instruction), job and system evaluation (by competency-informed evaluation), and organizational learning (system improvements by modifying competencies). This provides distinct advantage compared to an approach addressing the competencies for each individual job position in an unrelated fashion. Competency-based training, evaluation, and organizational change are therefore simplified (See Exhibit 1.5.6.1).

The competency sets for all personnel, the six job groups, and one function-specific group (personnel deployed to distant emergencies) are presented in Unit 5 of this curriculum text. A primary competency with its supporting competencies is presented in textbox 1.5.6.2 as an example.

Textbox 1.5.6.2

Primary and Supporting Competencies: An Example

A core All Personnel (AP) response competency (AP-R1)[315] is presented here to illustrate the competency structure presented in this text.

Primary (Core) Competency

AP-R1: Utilize general Incident Command System (ICS) principles during incident response and recovery.

Required mastery of this primary competency is at the Operations level.

Supporting Competencies

Knowledge

AP-R1.1: Describe ICS as an emergency response and recovery operating system and its application to healthcare system incident response and recovery, management structure, concept of operations, and planning cycle.

AP-R1.2: Describe your potential role(s) and responsibilities within the healthcare system response and recovery in terms of ICS principles.

[315] See Competencies in Unit 5 of this text.

AP-R1.3: Describe the ICS-delineated expectations of individual responders in relation to the healthcare system response and recovery to include: attendance at briefings, reporting requirements, and use of role-related documents such as Operational Checklists (Job Action Sheets).

Skills

AP-R1.4: Demonstrate an operations level of proficiency in ICS principles by utilizing appropriate forms, attending indicated meetings, and adhering to appropriate reporting requirements.

The use of competencies in personnel resource management are described further in this module (for instruction) and in Unit 4 (performance evaluation and organizational learning)

Lesson 1.5.7 An overview of emergency management education and training (instructional) activities

Lesson objectives

- *Explain the importance of consistent and precise terminology in the context of education and training in emergency management.*
- *Define the following terms: education, training and instructional drills in emergency preparedness.*
- *List competency-based approaches for designing and conducting emergency response education, training, and instructional drills.*

Instructional Terminology and Concepts in the Context of Emergency Management for Healthcare Systems

Imprecise terminology hinders the successful implementation and maintenance of the EOP.

Across the spectrum of emergency management, terminology has become progressively less precise as more disciplines have entered the field. These include homeland security, risk management, military personnel, public health, and others. Nowhere is this more problematic for emergency management than in education and training.

Personnel primarily involved in the homeland security field have introduced new terms and descriptions for long-standing incident and emergency management terminology and concepts. Many of these appear to have been drawn from the U.S. military, intelligence, and other related fields. This phenomenon is best viewed as "industry application" of emergency management concepts (see preface to this text). Over the past decade, "homeland security applications" have re-interpreted long-standing concepts of incident and emergency management, program management, instructional design, and theory related to systems, evaluation, and organizations. This variance is most evident in instructional and guidance documents published by the US Department of Homeland Security.

For the purpose of this text and emergency management education and training in general, the authors adhere to precise terminology and long-validated concepts within the context of emergency management, systems theory, and instructional development. The text strives to demonstrate the inter-relationship of management and technical concepts across this seemingly disparate subject matter. Accordingly, **specific terminology and their definitions are provided in this text and its glossary to clarify these terms and concepts in the context of emergency management for healthcare systems**. Other industry applications, plus some of the more abstract but interesting "academic" definitions and concepts found in the management literature, are acknowledged.

Many academic distinctions have been provided between education and training. The definitions utilized in this text are based upon practical considerations for what the activity is designed to achieve.

All healthcare system personnel should understand the importance and appropriate application of instructional strategies and techniques that contribute to their professional development and development as a team member in support of the EM program.

Education, Training, Drills, and Exercises and their Emergency Management Inter-relationships

To be successful, the emergency program manager must clearly recognize the similarities and differences between **education, training, drills, and exercises**, how they relate to each other, how they are managed, and how they are used to attain optimal performance during incident response and recovery. Within the EM program, these terms and their related concepts are used to organize the many preparedness activities involved in emergency system implementation, maintenance, evaluation, and improvement. Precise definitions of the terms are presented below.

Education is the conveyance of knowledge.

- <u>Education</u>: Education (see terminology textbox) is instructional activity that primarily provides **knowledge,** rather than skills or abilities. It may be an essential part of implementing the knowledge component of any competency (see Lesson 1.5.6). Emergency management educational activities impart knowledge relative to emergency management, including but not limited to incident response and recovery. This text is an example of education applicable to all four phases of Comprehensive Emergency Management: mitigation, preparedness, response, and recovery.

Terminology alert!

Education**:** Education is instruction, structured to achieve specific competency-based objectives, that imparts primarily **knowledge.** This may be general knowledge or it may be job specific, but it extends to "higher order" knowledge (for example, understanding the "big picture" or working under stress) not specifically included in one's job description but of great value during emergency management activities. Educational material should be competency-based and specify a level of proficiency that relates to the relevant competencies ("awareness, operations, or expert")[316].

- Training: Training (see terminology textbox) is instructional activity designed to provide individuals or groups of individuals with **skills** and **abilities** and, therefore, is another essential part of personnel resource management for EOP implementation. Similar to education, training can be generalized or progressively more job specific.

Training provides skills and, in some situations, abilities.

Terminology alert!

Training: Training is instruction that imparts and/or maintains the **skills** (and some **abilities,** such as strength and endurance) necessary for individuals and teams to perform their assigned system responsibilities. Training objectives should be competency-based and specify a level of proficiency that relates to the relevant competencies ("awareness, operations, or expert"). As much as possible, training should address skills function under the conditions likely when the skill must be conducted.

- Instructional Drill: This type of drill (see terminology textbox) may be considered an extension of education and training, advancing from a focus on individual knowledge, skills and abilities to training and practicing a series of related skills that follow each other after an initial

Drills form a third type of instructional activity that imparts a series or combination of skills.

316 Barbera JA, Macintyre AG, Shaw GL, Seefried V, Westerman L, DeCosmo S. *VHA-EMA Emergency Response and Recovery Competencies: Competency Survey, Analysis, and Report* (June 2005); accessed August 10, 2009 at: www.gwu.edu/~icdrm/

situation prompts the start of drill activities. Instructional drills may also vary from generalized to progressively more job specific actions.

Terminology alert!

Instructional Drill: A training application that develops a combination or series of skills.

- Drills as an extension of education and training: Drills should not be used as a starting point for instruction. Instead, they build upon individual and team training and educational activities to impart the skill and abilities to accomplish complex process and procedures. They also may extend the educational and training experience into the realm of simulated emergency conditions. In healthcare system emergency management, for example, a decontamination drill trains personnel to conduct a series of individual skills: mobilizing the patient decontamination (DECON) unit, donning personal protective equipment, demonstrating patient reception, making decisions about length of DECON and decontamination technique, processing and conducting decontamination for simulated victims, demobilizing the DECON unit, and returning to readiness. Similarly, a mobilization drill for a healthcare system command post teaches personnel to set up the facilities under urgent incident circumstances, while beginning incident management operations.

- Instructional versus evaluative drill: While the primary purpose of a drill is to **train to and practice a series of skills (i.e., "instructional")**, some drills are conducted primarily to **validate** individual and team capabilities, policies, procedures, communication, and decision making within a component of the EM program and EOP. These therefore have a more formal evaluation component (see Lesson 4.2.4). Because their primary purpose may be to evaluate functional capabilities or capacities, in this text they are distinguished from instructional drills by qualifying them as "evaluative." Evaluative drills are addressed further under "exercises" in this text.

- Collective terminology: Despite the differences between education, training, and drills, many emergency management organizations refer to all three as "training" to avoid confusion during detailed discussion of preparedness activities. This text uses "**instruction**" and "**instructional activity**" to collectively describe these three instructional categories.

- Categorizing instruction: As applied to the EM Program, instructional content and activities may be predominantly education or training (see Text box 1.5.7.1 below):

Textbox 1.5.7.1

Defining and Differentiating "Training" and "Education"

Academic and professional literature sources present a range of definitions for education and training and for the association between these terms. For example, sources such as Nadler's *Handbook of Human Resource Development*[317] presents training as imparting the competencies required for a person or team's current job responsibilities, and education as providing personal and professional development for transition to a new job. Other authoritative sources take the term education to a level beyond specific job requirements to include the development of understanding and the promotion of personal growth.[318]

This emergency management text takes a more practical view of the difference between education and training: they are differentiated by **the preponderance** of knowledge versus skills/abilities acquisition. Education and training are essentially ends of a continuum that directly relates to competencies: education primarily teaches knowledge competencies, training is primarily skills and abilities; one may even argue that "awareness level training" (see below for explanation) is "education" and not training, since operational skills are not imparted. In practice, neither training nor education is found totally independent of the other, but the preponderance of the learning objectives should indicate one or the other category of instructional activity.

Distinguishing between primarily educational and training activities allows for the development of concise and accurate learning objectives for each instructional activity.

Distinguishing between primarily educational and training activities allows for the development of concise and accurate learning objectives for each instructional activity.

Precision in delineating instructional goals, scope and depth is critical to optimal EM program management. The instructional content and activities are developed, structured, and delivered for the purpose of preparing each individual position and operating unit (i.e., hospital functional area) with the competencies (knowledge, skills, and abilities)

[317] Nadler Leonard (1984). *The Handbook of Human Resource Development* (Glossary). New York, New York. John Wiley and Sons.
[318] *American Heritage College Dictionary* (1997). Boston, Massachusetts. Houghton Mifflin.

ISD is consistent with a systems approach. It provides structured methods for the development, conduct, and evaluation of instructional and evaluative activities.

to accomplish their roles and responsibilities within the EM program. The designated level of proficiency for each competency indicates the mastery of the competency knowledge, skills and/or abilities that the successful student should be capable of performing at the conclusion of the instructional activity.

- Education range: Education can vary from basic orientation material that provides only an awareness level of proficiency to very complex instructional activity that provides the basis for expert-level proficiencies.

- Training range: Training can range from the provision of awareness level skills or general abilities, such as physical endurance, to very specific instructional activity that imparts mastery of complex job skills.

A Systems-based Approach to Instructional Activities

All healthcare system personnel should understand the importance and appropriate application of instructional strategies and techniques that contribute to their personal development and development as a team member in support of the EM program. As with all other aspects of EM programs, the development and conduct of instructional activities should be accomplished in a consistent, systems-based manner. As described in the systems approach to Emergency Management presented in Unit 1, common elements and templates are used to promote consistency, effectiveness, and efficiency across instructional and evaluative activities.

- Maintaining common elements in instruction, evaluation, and improvement: Instructional activity, exercise, and system improvements are usually only loosely coordinated within emergency management programs. A primary reason for this is that it has been difficult to directly relate the three activities using common elements. As noted above, the use of **competencies** in these program activities and the use of consistent processes and templates to develop and conduct the activities will establish a more effective coordinating mechanism.

- Instructional Systems Development (ISD) process:[319] ISD presents an organized template strategy that incorporates organizational objectives, competencies, and other critical design considerations into a consistent instructional development process. By following the ISD

319 ISD is also referred to as “Instructional System Design” with the same acronym, but the use of the term “Instructional System Development” generally refers to a more comprehensive process and so is used in this text.

steps and using the competencies and competency framework presented in Lesson 1.5.6, instructional courses can be developed that are consistent in content and progressively more specific going from all personnel to individual position specific education and training. ISD is addressed in great detail in the next lesson.

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Lesson 1.5.8 Developing and Conducting Education, Training, and Instructional Drills

Lesson objectives

- *Define the Instructional Systems Development (ISD) process and its application to emergency management education, training, and drills.*
- *List the characteristics of the Instructional Systems Development (ISD) process that make it an effective strategy for EOP implementation and maintenance.*
- *List the different steps (phases) and considerations for the development of education, training, and drills using the ISD process.*
- *Define the different types or "levels" of evaluation in the ISD process.*
- *Explain the application and incorporation of competencies and competency proficiency levels to education, training, and drills.*
- *List and define the different types of instructional categories and how they relate to competencies.*
- *List the advantages of in house developed instructional activities versus vendor supplied instruction.*

Introduction

Education, training, and instructional drills are inter-related concepts that assist with the implementation and maintenance of any system. This lesson focuses on designing, developing, and conducting each type of instructional activity and then discusses the strategic planning necessary for an overall instructional program. The relationship between education, training, and instructional drills and other elements of the emergency management program is examined first.

Instruction applies to many elements within the Emergency Management Program. Examples include:

Adequate instructional activities are essential to EOP implementation and maintenance. This should receive the commensurate level of attention.

- Instruction and the EOP: The implementation and maintenance of a functional EOP requires an effective instructional program and quality instruction. Almost all organizational personnel play some role in emergency response and recovery operations and should receive the commensurate level of instruction, practice, and feedback to meet that assigned role.

- Instruction and equipment/supplies/facilities resources: Some element of education and training is necessary for personnel to perform using equipment, supplies, or facilities for which they are unfamiliar, or for which they are using for unfamiliar tasks or in unfamiliar settings. Any decision to purchase or develop a new resource should include an analysis of the initial and maintenance instruction that will be necessary for safe and effective performance by personnel using the resource.

- Instruction and organizational Improvement: Instruction is one avenue to improving emergency response and recovery. Before assuming that the root cause for an identified performance deficiency is an instructional issue, however, an in-depth performance analysis should be undertaken. This should determine whether education or training is actually the problem, and, therefore, whether an instructional intervention is the most effective solution (see Textbox 1.5.8.1 later in this lesson).

- Instruction and professionalism in emergency management: Although it may appear that training, education, and drills are relatively simple to develop, conduct, and evaluate, these activities should be undertaken in a focused and careful manner.

  - Extensive effort and experience is required to develop and conduct **quality** instructional activity.

  - As emphasized throughout this text, instructional activities must be addressed in a systematic manner for an emergency management program to be optimally effective:

Instructional activities should be developed and conducted in a consistent and professional manner.

    - The multiple instructional courses should be coordinated according to strategic planning that addresses consistency and comprehensive coverage of emergency response and recovery competencies.
    - Instructional activities should be based upon the system that will be used for that individual organization, particularly for instruction intended to impart operational and expert levels of proficiency. This precludes, in most situations, the use of “off the shelf” or generic instructional activities from many vendors.
    - Adult education and other valid educational principles should be applied across all of these activities.
    - Evaluation of each instructional activity should be conducted consistently.

The ISD Process for a Systems Approach to Training, Education, and Drills

Instructional Systems Development (ISD), as discussed briefly in the preceding lesson, is the systems approach most widely used in developing instructional material. ISD promotes consistency through an organized, step-wise incorporation of the appropriate considerations. Its history and application in healthcare system EM is presented in detail here. ISD is currently the most widely accepted strategic template related to professional instructional activity. Extensive experience with ISD across many professional disciplines has demonstrated its effectiveness.

Instructional System Development (ISD) is a widely recognized process for producing effective education and training.

- History of ISD: ISD as a process was developed at Florida State University in the mid-1970s, under the sponsorship of the Department of Defense, for the purpose of providing effective and efficient job specific training and education to service members. It was initially called "SAT" (Systems Approach to Training), [320] and later referred to by some sources as "Instructional System Design." ISD is also known as the ADDIE model for its five phases (Analysis, Design, Development, Implementation, and Evaluation).[321] Over the past 30 years, ISD has been widely adapted throughout the military services, the private sector, all levels of government, and the not-for-profit sector. Theory and application continues to evolve.[322]

- ISD process: ISD is a multi-phase, iterative process for the development and conduct of instructional activities. The defined phases are: Analysis, Design, Development, Implementation, and Evaluation.

- ISD as a stand-alone program: ISD was originally conceived on the premise that it was a central, defining template for any organization developing systems material. In other words, ISD assumes that other components of a program (e.g., carefully described system description, competency development, hazard vulnerability analysis) do not exist for the organization to any satisfactory degree prior to the initiation of the ISD process (i.e., development of instructional material). ISD therefore appears to exist in isolation from the other programmatic functions listed in this text, some of which occur before

[320] U.S. Marine Corps Combat Development Command. *Systems Approach to Training (SAT) Manual*. (2004). Quantico, Virginia.
[321] *ADDIE Model*. Instructional Design Web Site, accessed March 26, 2010 at: http://www.instructionaldesign.org/index.html
[322] Reiser, RA. *A History of Instructional Design and Technology: Part II: A History of Instructional Design*; Educational Technology Research and Development (2001); 49(2), pages 57–67; accessed March 26, 2010 at: http://www.speakeasydesigns.com/SDSU/student/SAGE/compsprep/History_of_Instructional_Design.pdf

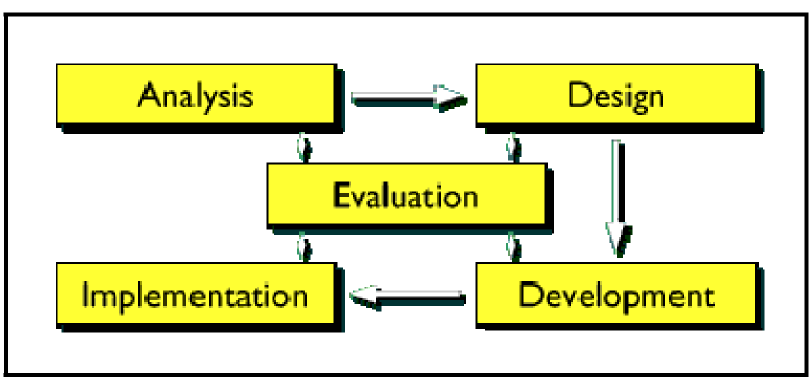
instructional activities. For example, ISD depicts the analysis phase (the foundation of the ISD process), as the interval for the development of competencies. This text and many EM programs develop these prior to creating instructional materials. In the presentation of ISD below, these variances are noted and program products (such as the competencies) are inserted into the appropriate step of ISD. In this example, the analysis phase prompts the generation of competencies if they are absent (or confirms them if they have been already developed). The follow-on phases of design, development, implementation, and evaluation are all informed by the relevant competencies.

- ISD & evaluation: While ISD incorporates an assessment component, this evaluation is focused upon the **instructional activities themselves** and can be considered a component of preparedness planning evaluation. The evaluation of instruction as it relates to the exercised EOP and its elements during actual and simulated response and recovery effectiveness is addressed extensively within the system evaluation discussion in Lesson 4.2.4.

The phases of ISD

The following diagram (Exhibit 1.5.8.1) depicts the phases of the ISD process and the inter-relationships of the ISD phases. The “evaluation” focus throughout the ISD phases is emphasized by its central location and connection to each phase. ISD is not a linear set of steps, but an iterative process that is responsive to changing conditions and new information. A brief description of each phase follows the ISD diagram.

Exhibit 1.5.8.1. The phases of the Instructional Systems Development (ISD) model.



- ***Analysis:*** The systems approach to instructional design begins with a sound analysis. The objectives of the instructional activity can then be established and the performance requirements of the individuals and group receiving instruction can be delineated.

  - Analyze the organization: Before addressing the objectives and job-specific requirements for the instruction, the analysis focuses on the organization: its mission, structure, size and complexity, management and decision-making methods, the characteristics of the workforce, and the products and services it provides under all conditions. Additionally, analysis of constraints placed upon the organization should include an assessment of the availability of resources (funding, time, and personnel); the commitment of leadership, communication channels, and union/labor rules; as well as other organizational factors that have the potential to influence the development and conduct of instructional activity. In an effective EM program, much of this will be clearly delineated before embarking upon ISD for instructional development.

  - Analyze the issues the instruction will address: The organizational and constraint analysis (above) establishes the context for the instructional program. Analysis next focuses on the individuals and teams to determine:

    - A definition of the issue or problem to be resolved by the instruction (e.g., the gap between current capabilities and desired job-related performance, the maintenance of particular education or skills, or others).

    - A description of causes and solutions to the defined problem/s: **It is important to determine that the deficiency is an education or training gap, rather than another issue such as a system design flaw, a motivational challenge, or other problem** (see Textbox 1.5.8.1 below).

    - A "job/task analysis" to identify exactly what individuals and teams must be able to do, and to the designated level of proficiency, to meet the **requirements** of the job. In most situations, the identification and validation of individual and group competencies (and their indicated levels of proficiency) serve as the "job/task analysis." Well-described position descriptions and position qualifications (using competencies) within the EOP obviate the need for a job/task analysis.

Analysis, the first phase of the ISD process, examines the context and the constraints for the instructional activity before delineating objectives.

A common tendency is to assume performance deficiencies are a direct result of inadequate instructional activities. The use of tools such as HPT can help to identify other critical problems (such as motivational issues) that can impact performance. Emergency Program Managers are urged to consider these other factors when evaluating performance.

Textbox 1.5.8.1

Performance Analysis and Instruction

In many situations, instructional activities are accepted as the default solution to individual and team-level performance gaps or deficiencies. Careful examination, however, may demonstrate that the actual issue is a design flaw, poor motivation in performers, or some other factor. This should be accomplished through a **performance analysis** (see HPT example below).

Alternatively, instruction may in fact be the correct solution, particularly when new policies, procedures, or equipment are introduced, or when an individual or team is assigned new or additional responsibilities.

Motivation may be a controlling factor, particularly when rigid training is provided under mandate from an authoritative outside source, such as the Occupational Safety and Health Administration (OSHA). Participants may not see the relevance of this instruction to their performance, so motivation rather than the instructional package itself may be the issue.

Instruction without adequate analysis and validation may be misguided, a wasteful use of limited resources, and may not resolve the targeted performance problem (see HPT sidebar).

Human Performance Technology (HPT): An Example Approach to Performance Analysis[323]

Human Performance Technology[324] (HPT) is a systematic approach embraced by myriad organizations, notably the Department of Defense and the U.S. Coast Guard, to promote and support effective and efficient individual and team level performance within the context of the overall organizational goals and missions and the many relevant sub-systems. The goal of HPT is to properly identify and define performance problems/gaps and to select and apply the appropriate intervention(s) (training and non-training) that develop and maintain the desired level of performance. Instruction may be,

[323] The HPT performance analysis approach is also relevant to evaluation across the EM program as discussed in Lesson 4.3.

[324] U.S. Coast Guard. *Standard Operating Procedures (SOP) for the Coast Guard's Training System*. Volume 2–Analysis (2004). Coast Guard Headquarters. Washington, D.C.

and often is, the appropriate solution; however, HPT recognizes that there are other influences on performance including:

- Personnel selection.
- Personal capabilities.
- Personal motivation.
- Organizational motivation (incentives and rewards).
- Organizational guidance (unclear goals, objectives, policies, procedures).
- Lack of appropriate equipment, supplies, etc.
- Lack of support by leaders and/or co-workers.

HPT as a process mirrors and supports the ISD process and is based on sound organizational, constraint, and performance analyses. If personal, organizational, resource, or environmental obstacles stand in the way of individual and team performance, those obstacles must be identified and removed if instruction is to effectively achieve response objectives. In fact, addressing these obstacles may obviate the need for additional instructional activities. Alternatively stated, if you ask a person if they could do something "if their life depended upon it" (i.e., extreme motivation applied), and the answer is "yes," the problem is probably not instruction-based and new instructional activities will not resolve the performance issue. Instead, other obstacles to adequate performance (motivation, cumbersome process design, interpersonal conflict, etc.) must be identified and corrected.

- Identifying mandates: In some cases, the analysis process in ISD is significantly affected by mandates that delineate legal and/or regulatory compliance and accreditation standards. These standards may need to be incorporated into the instruction and so may be treated in a similar manner to competencies. For example:

  - The Occupational Safety and Health Administration (OSHA) standards as set forth in the Occupational Safety and Health Act[325] establish instructional requirements for all employees regularly working with a defined level and type of hazardous materials.

  - The Joint Commission[326] establishes healthcare facility

[325] U.S. Department of Labor, Office of Compliance Assistance Policy. *The Occupational Safety and Health (OSH) Act;* Website accessed March 26, 2010 at: http://www.dol.gov/compliance/laws/comp-osha.htm
[326] The Joint Commission Website accessed March 26, 2010 at: http://www.jointcommission.org/

accreditation standards, including standards related to performance during emergency situations. These convey specific instructional and exercise requirements for healthcare workers.

- Analyzing mandates: After identifying mandates, they must be further evaluated based upon their requirements. Mandated training requirements constitute an important component of analysis, since the most efficient and effective way to meet them may vary across organizations and individual facilities. Examples include:

  - Many regulations require a specific number of “training” hours for staff members. The training opportunities should be carefully evaluated to optimize cost-effectiveness. For example, HAZWOPER, which is OSHA mandated training for personnel tasked with emergency response to hazardous materials situations, delineates specific time requirements for the instruction provided to staff preparing to wear PPE during the response to hazardous materials incidents.[327] For healthcare system preparedness, the time spent providing education and training as well as the time spent “drilling” the EOP decontamination function may be included as PPE “training hours,” as long as direct supervision by competent instructors is provided over the PPE-equipped personnel.

  - “Refresher training” mandated by some regulatory standards (such as the U.S. Occupation Safety and Health Administration) may also be met in part through “demonstration of competencies” rather than only by a specific amount of classroom training time.[328]

- Incorporating mandates: Mandates should be identified and then incorporated into the consideration during the remaining steps of ISD (beyond analysis) to ensure that they are translated into learning objectives and that the instructional activities address the mandates while fully supporting the EM program.

Design, the second ISD phase, includes the development of objectives of the instructional activity.

[327] U.S. Department of Labor, Regulations (Standards - 29 CFR) *Hazardous Waste Operations and Emergency Response. - 1910.120*.; accessed March 26, 2010 at: http://www.osha.gov/html/faq-hazwoper.html

[328] OSHA/DoL. *Training Curriculum Guidelines - (Non-mandatory) - 1910.120 App E*; accessed March 26, 2010 at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9770

- ***Design***: Planning the instructional activity occurs during the design phase of ISD.

  - Learning objectives: Using the results of the ISD analysis phase, instructional requirements and outcomes are translated into goals and learning objectives (see terminology textbox) upon which instruction is designed. These should be developed directly from the competencies and mandates captured during analysis and should be cross-walked with them to be sure all are incorporated. See "Writing SMART Objectives" in Textbox 2.1.3.1. As an example, learning objectives from educational activities will often be based upon knowledge elements (list, define, etc.) versus objectives from training which would be based upon activities (perform, assemble, notify, etc.).

The VHA Emergency Response and Recovery competencies are grouped into primary and supporting competencies. The supporting competencies can directly translate into objectives and metrics for instructional activities (phase 2 of the ISD process).

Terminology alert!

Learning objective: A precise statement describing what the student is to be capable of demonstrating, under the specified conditions, upon successful completion of the instruction. In competency-based instruction, learning objectives should clearly and concisely describe the relevant competencies a student should be capable of performing after successful completion of the instructional experience.

  - Selecting instructional methods: The ISD design phase then addresses the matching of instructional methods to the intended audience and the selection of instructional media, materials, and methods of evaluation.[329] An essential component of this instructional design is incorporating characteristics of adult learners (see Textbox 1.5.8.2).

Design also includes the selection of the methods, materials, and media for the instructional activity.

[329] Jonassen DH, Grabinger1 RS, Harris NDC. *Analyzing and Selecting Instructional Strategies and Tactics*. Performance Improvement Quarterly (1990);3(2), Pages 29-47.

Textbox 1.5.8.2

Adult Learning

Academic literature examining adult learning generally supports the position that adults should be taught differently than children and adolescents and that their instructional activities should not be passive.[330] The following characteristics of adult learners should be carefully considered in all phases of the ISD process:[331]

- Adults prefer self-direction.
- Adults have experience that should be used and built upon.
- Adults' readiness to learn depends upon their needs.
- Adults' orientation to learning is life- or problem- centered.
- Adults often learn best in small groups.
- Adults need a supporting and challenging environment.

An in-depth description of these characteristics is beyond the scope of this text. Professional instructional developers should have an appreciation of these characteristics and properly include them in the ISD process.

Development, the third ISD phase, provides the actual materials and strategies for the instructional activity. This necessarily includes the evaluation methods to be used to assess the effectiveness of the instructional activity.

- ***Development*** – The development phase of ISD translates design into actual instructional strategies and materials for instructors and students. Evaluation methods, tools, and standards are further defined. Again, the characteristics of adult learners must be incorporated into the instructional development phase.
    - <u>Instructional development</u>: Specifically, instruction should:
        - Set the context for learning by relating the specific instruction to higher order goals and objectives.
        - Be segmented into logical and manageable lessons to facilitate acquisition and mastery of the knowledge and skills and to conduct verification that this has occurred.
        - Allow for practice of newly acquired knowledge elements and skills.[332]

[330] *Systems Approach to Training (SAT) Manual*. Section 6000. U.S. Marine Corps Combat Development Command. (2004). Quantico, Virginia.
[331] *Systems Approach to Training (SAT) Manual.* Section 6200 (2004). U.S. Marine Corps Combat Development Command. Quantico, Virginia.
[332] Adapted from: *Systems Approach to Training (SAT) Manual*. Section 6400. U.S. Marine Corps Combat Development Command. (2004). Quantico, Virginia.

- ***Implementation:*** The implementation phase of ISD focuses on the details of instructional conduct and includes its actual delivery. Effective and efficient instruction requires a management plan, scheduling, logistical support, and continuous monitoring. Regardless of the quality of the analysis, design, and development phases, inadequate implementation can doom the instructional program to failure.

Implementation, the fourth phase of ISD, focuses on preparation and conduct of the instructional activity.

  - Instructor selection: Particular attention should be paid to the qualifications and selection of instructors to deliver instructional material and facilitate the learning process. Beyond possessing subject matter expertise, instructors should understand and apply the principles of adult learning practices and exhibit effective communication skills. Additionally they should possess the skills needed to[333]:

    - Effectively communicate complex topics in easy-to-understand language.

    - Assist/facilitate trainees as they work through real-life scenarios while integrating many diverse perspectives into decision-making processes and emergency response and recovery planning and operations.

    - Motivate trainees from different professional disciplines to work together during emergency response and recovery operations.

- ***Evaluation***: The term evaluation in ISD applies to both the assessment of the conduct of the instructional activity as well as the outcome of the instruction as it relates to program requirements. The ISD recommendation for assessing the instructional activities includes both Formative and Summative Evaluation (see extensive discussion of these two evaluation categories in System Evaluation, Lesson 4.3.1). In ISD, evaluation is delineated by four "levels."

Evaluation is conducted throughout the four ISD phases. It applies to assessment of the conduct and content, as well as the outcomes of the instructional activity.

  - Formative evaluation in ISD: This asks and answers the question: "Does the **instructional activity itself** meet the goals and objectives established during the analysis phase in an efficient and effective manner?" This evaluation is generally not highly

[333] Adapted from: Barbera J.A., Macintyre A.G. (Knebel A, Trabert E, eds). *Chapter 8. Implementation, Training, and System Evaluation,* in Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources during Large-Scale Emergencies. CNA Corporation, under contract to the U.S. Department of Health and Human Services, (Second Edition, September 2007); accessed February 15, 2010 at: http://www.hhs.gov/disasters/discussion/planners/mscc/index.html

structured but requires monitoring during each phase of the ISD process to ensure that each successive phase properly reflects the output and intent of the preceding phases. The intent of this questioning is to recognize areas that are suboptimal and so incorporate improvements.

- Summative evaluation in ISD: This asks and answers two questions:

  - “Do the instructional outcomes meet the goals and objectives established during the instructional analysis phase?”

  - “Are the goals and objectives established during the instructional analysis phase correct and sufficient to meet EM program and EOP requirements?”

ISD evaluation may be highly structured and include one or more of the following levels of assessment.[334]

1. Reaction: Reaction based evaluations provide data on how the instructor and students reacted to the instructional content, activities, instructor, and environment. They are generally a measure of satisfaction, an essential component of the continual improvement of the learning process, but they may fall far short of evaluating instructional outcomes tied to program goals and objectives. An example might be an evaluation survey after completion of an instructional activity.

2. Learning: Learning evaluations provide data on the students' mastery of the material presented and/or experienced during the education or training session. Learning evaluations should be focused upon assessing the students' achievement of the goals and objectives established during the instructional analysis phase. A common tool utilized to evaluate learning is a “post-test” that follows instructional activity. Depending upon how this is structured, it too can be a limited evaluation of whether the instructional activity meets organizational goals.

3. Behavior: Behavior evaluations provide data on the new behaviors used by the learners when they return to their jobs. This level of evaluation is considerably more difficult and resource intensive than the two previous levels since it involves the actual observation, measurement and reporting of on-the-job behaviors. A failure of behaviors to translate to the job

[334] Office of Personnel Management. *Evaluating Training: A Primer*; accessed August 10, 2009 at: http://www.opm.gov/hcaaf_resource_center/assets/Lead_tool6.pdf

when the learning evaluations support adequate mastery may be an indicator of incomplete performance analysis via the HPT process (see Textbox 1.5.8.1). If the instruction is competency based, this level evaluation essentially can be the observation of the competencies that the instruction addressed.

4. Results: Results evaluations provide data on how the training impacted *the organizational* goals and objectives. A mismatch of training results to desired organizational impacts calls for a total reexamination of the training course and program to bring training outcomes into alignment with the identified organizational goals and objectives.

- ISD evaluation in EM programs: In EM programs, ISD evaluation for each specific instructional activity is commonly focused upon the initial two evaluation levels. Methods therefore include:

  - Reaction: assessed through participant surveys and interviews.

  - Learning: the quality as well as degree of learning is assessed through classroom tests and observations of skill performance, drills, and exercises.

- Individual and system performance evaluation: The complete measure of the effectiveness of instruction, however, resides in the third and fourth levels, which focus on the transfer of the instruction to competent job performance and the impact of the instruction on organizational goals and objectives.

  - Levels 3 and 4 of evaluation: These extend in time beyond the actual period of instruction and require ongoing monitoring of the workplace and environment.

  - ISD evaluation versus EM program evaluation: Levels 3 and 4, in effect, are directly within the competency and output and outcome based evaluative methods described in Unit 4 of this text for EM programs. Level 3 (Behavior) and Level 4 (Results) evaluations are normally accomplished during exercises, proxy events, and actual emergency response, and through the assessment component of the After Action Report process. Ideally, realistic exercises conducted in a controlled, closely monitored and documented environment provide the means and data for assessing the outcomes of individual and group instruction. These findings can then guide curriculum revision as indicated.

In summary, the ISD process provides a reliable framework for systematic instructional analysis, design, development, implementation, and evaluation. It has been an accepted standard for over 30 years and has been widely embraced by the public, private, and not-for-profit sectors.

Healthcare-Specific EM Program: Planning Considerations for Instructional Activities

The following issues are important instructional considerations for healthcare system emergency managers:

- Balancing the focus and level of training: Instructional activities follow well thought out strategic planning so that the education, training, and instructional drills are designed and developed as a balanced program, with progressively focused and challenging stages. Courses may be developed using the progressively narrow levels of competency sets: from core to job group to function-specific group to position-specific, as discussed in Textbox 1.5.8.3 and depicted in Exhibit 1.5.8.1. The strategic planning assures that the instructional program covers all necessary knowledge, skills, and abilities at the appropriate levels of proficiency. It also assures that all key functions and priority hazards for the organization have been addressed in the instructional activities.

Textbox 1.5.8.3

Competencies and ISD

As presented in the ISD process description, competencies can be a product of the analysis phase (if not accomplished when developing position qualifications during the system development). Competencies form the basis for the instructional design, development, implementation, and evaluation during any instructional activity.

- If properly identified and written, competencies (qualified by their required level of proficiency) are translatable into learning objectives.
- All instructional learning objectives should be competency-based and specify a level of proficiency that relates to the relevant competencies ("awareness, operations, or expert").
- Since the mastery of competencies generally occurs over a period of time and requires practice and evaluation (usually through evaluative drills and exercises), primary competencies are decomposed into supporting competencies for the purpose of instructional activities and strategies. Each supporting competency provides a critical component of the primary competency, representing a specific knowledge element, skill, or ability that can be translated, during the ISD process, to a learning objective for instructional design.

In the competency framework presented in this text, the **primary competency** can be demonstrated and properly evaluated primarily in ISD (Level 3 and 4 evaluations) during actual response and recovery operations or during an appropriate exercises or proxy events. The **supporting knowledge competencies**, however, can be addressed and evaluated (Level 2 evaluations) through a range of instructional assessment strategies, including individual and group classroom sessions, reading materials, computer-based instruction, coaching, etc. The **supporting skill competencies** can best be demonstrated and evaluated through supervised/evaluated drills that focus on each skill or combination of skills (utilizing forms, attending meetings, adhering to reporting requirements).

The proficiency level of the competencies covered in the instruction can be used to categorize the level of the instructional activity.

__Full-spectrum instruction includes the impartation of knowledge (education) and skills (training), with drills to complete the skills training. Both evaluation <u>of the students</u> and evaluation of the instructional activity are important.__

- Defining types of instruction, including refreshers: The instructional program should define the specific types of instruction it provides. This includes not just initial instruction but also planning and administering recurring/refresher training to sustain competency proficiency. Strategic planning assures not just that the courses are occurring, but that they are being revised as indicated to incorporate changes in the EOP or to address improvements identified through the ISD process or EM program evaluation.

    - EM education: This knowledge-focused instruction includes reading, computer-based, or classroom presentation that supports skills attainment but, by itself, is primarily an educational activity and is generally not sufficient to attain operational proficiency for the actual skills except perhaps for completion of ICS and other EOP forms.

    - EM training**:** This skills- and/or abilities-focused instruction includes learning plus supervised and unsupervised practice, and allows trainees to learn, master, and maintain targeted skills and abilities under actual or simulated conditions. This is accomplished in a relatively non-threatening environment supported by guidance and feedback to assist in the mastery process. An example might be training on the use of two-way radios for response.

    - Full-spectrum instruction: This approach incorporates education modules, skills training, and follow-on drills into a single training curriculum that can effectively provide specific instruction for very complex competencies. Full-spectrum instruction combines both education and training as defined in this text. Performance-based evaluation of participants who successfully complete the instructional phase of this training provides a basis for validating individual competencies and team capabilities, as well as assessment of components of the EM program and EOP. Examples of this type of instructional activity include:

        - The Advanced Cardiac Life Support (ACLS) course (see Textbox 1.5.8.4) is a well-known example that provides both knowledge and skills in a balanced format. In addition, students practice series of skills through "drills." Evaluation is accomplished through a multiple-choice test and performance in a scenario-driven skill session. This type of evaluation is common for nationally distributed instructional courses with large student-to-instructor ratios.

        - The Medical Team Training Course from the FEMA Urban Search & Rescue Response System is a successful emergency response course also based upon this model.[335] Individual and team performance is evaluated during a 4-hour follow-on evaluative drill at the conclusion of the course.

Textbox 1.5.8.4

Instructional Course Integrating Education, Training, and Drills

Integrated instruction is widely used in clinical courses teaching complex medical knowledge, skills, and abilities. Perhaps one of the longest-serving and best recognized of these examples is the American Heart Association's "Advanced Cardiac Life Support© (ACLS)" course.[336] The format template from this widely taught curriculum has been applied in many "Life Support" courses taught by other disciplines.

Its format includes:

- Lectures providing the medical knowledge to manage cardiopulmonary emergencies.
- Skill stations teaching life-support skills, such as airway intubation.
- The drill station "Megacode," which provides an evaluative drill where knowledge, skills, and ability conveyed earlier in the course must be applied to successfully manage the scenario-prompted patient assessment and appropriate interventions, which is presented under simulated stress of an actual emergency.

Successful completion of the course is determined by a written post-test and by the performance evaluation from the Megacode experience.

- Levels of proficiency applied to Education, Training, and Drills:
    - Designation of "instructional proficiency levels": Per the discussion of competencies in Lesson 1.5.6 specified "proficiency levels" are used to designate the mastery necessary in each competency required by a personnel position. Since all instruction should be competency-based (see Textbox 4.2.2.3 for discussion), the same

[335] Federal Emergency Management Agency. *The US&R Medical Team Training Course.* Urban Search & Rescue Program (course also called Medical Specialist Course by FEMA) has an outline and modules, accessed March 26, 2010 at: http://www.fema.gov/emergency/usr/medmanual.shtm

[336] American Heart Association. *Advanced Cardiac Life Support Course*; accessed March 26, 2010 at: http://www.americanheart.org/presenter.jhtml?identifier=3011972

It is helpful to assign a proficiency designation for each instructional activity, reflecting the relevant competencies conveyed by the activity.

"level" designators and definitions apply to instruction that is designed to provide proficiency in specified competencies. Education and training sessions should all be designated as one of the following:

1. Awareness level instruction: Provides an understanding of the knowledge, skills, and abilities required for the target group as described by competency set, but does not extend to a level of capability to adequately perform the target positions' actions within the organization's system.
2. Operational level instruction: Provides the knowledge, skills, and abilities required for the target group as described by competency set. Successful participants can safely and effectively perform the assigned tasks and activities **within the organization's system in the projected contex**t (e.g., emergency response), including use of all indicated equipment, supplies and facilities.
3. Expert level instruction: Provides the operations-level proficiency plus the additional knowledge, skills, and abilities to apply expert judgment to solve problems and make complex decisions.

- ○ Assigning the appropriate level designation: The predominant proficiency level of the competency(s) that the instructional activity covers should be used to qualify that activity. This proficiency designator should always be used when titling the activity (and in presenting the objectives) to convey the performance expectation at the completion of the instruction. An example is "awareness training on the management of chemically contaminated casualties" provided to all personnel after the decontamination system and related procedures have been developed. This is differentiated from the "operations level training on the management of chemically contaminated casualties" that is provided to the decontamination team

- Expert-level instruction considerations:

  - ○ Competency set for expert-level instruction: This level of instruction (education and/or training) conveys expert-level proficiency (see terminology textbox in Lesson 1.5.6) for the relevant competency set. It therefore infers that the participant already has the ability to perform at the operational level (or it provides instruction for operational proficiency). Successful participants graduating from effective expert-level instruction **can use expert judgment to make decisions beyond the clearly defined decision guidelines for a specific competency or position responsibility** (see "expert judgment" in Lesson 4.3.2). For example, the ability to modify patient triage guidelines during response to a very unusual hazard agent (such as hydrofluoric acid) may be considered an indication of expert level of proficiency in patient care.

- Operational-level proficiency as a baseline: Students should ideally already be experienced in operational-level emergency response and recovery.

- Complexity of expert-level instruction: Expert-level instruction is generally more complex and effort-intensive than lower proficiency courses. This is sometimes accomplished using scenario-based discussion, where participants develop expert judgment by working through complex decision making with an expert mentor. Expert-level instruction may also be accomplished through mentoring during activities requiring expert judgment. For example, during exercises, mentoring and "coaching" of specific personnel during exercise play may provide this instruction, but the mentor must assure that this "training" does not compromise the overall evaluative purpose of the exercise.

- Using job-related categories to characterize instruction: Emergency response and recovery positions within the organization may also be grouped according to common competencies for the purpose of designing and conducting training and education. The descriptive categorizing of courses for training personnel with jobs having similar competency sets should present a relationship between the competencies, the learning objectives of each course and the job divisions used by the healthcare organization. The instructional strategic planning can then more easily be shaped during EM program preparedness (see Lesson 1.5.1).

  - Designation of course categories: In this text, the categories follow the job level divisions recommendation for healthcare systems and presented in Lesson 1.5.6.

    - All personnel education or training: Instruction that conveys core competencies.

    - Job group education or training: Instruction that conveys the competencies specific to the major everyday job group in the healthcare organization. Major job groups defined earlier in this text (Lesson 1.5.6) include Healthcare System Leaders, Patient Care Providers, Emergency Program Managers, Clinical Support Services, Facility and Engineering Services, and Police and Security Services.

Instructional activities should support a progression of knowledge and skills acquisition. The use of "categories" can aid implementation of this instructional strategy.

- Function-specific education or training: Instruction that conveys the competencies for the specific function, whether it is an IMT section, or a task force, unit, team, or other designated element within the EOP.

- Position-specific education or training: Instruction that conveys the competencies for a specific position in emergency response and recovery for the organization.

A progression in competency proficiency, or additional knowledge, skills and abilities is expected as courses advance from "all personnel" to "position-specific." Refresher courses to maintain competency proficiency are also necessary.

Strategic instructional planning is then developed with appropriate balance across EOP functions and individual elements.

Appropriately characterizing and describing each instructional module

Instruction that has been developed, or that is being promoted by vendors, should be fully characterized, with the following suggested designations.

1. The personnel groups (all personnel, specific job group, a function-specific group, or a specific position) for which the training is intended.
2. Whether it is primary or refresher training.
3. Whether it is primarily education (knowledge) or training (skills and/or abilities).
4. The competencies to be acquired upon successful completion of the training.
5. The overall proficiency level that the instruction is intended to convey to the target personnel.

Instructional course description should also list the pre-requisite courses or, alternatively, the pre-requisite competencies, that the participants are expected to already have achieved, from experience or from prior instruction. The pre-requisites generally indicate the competencies necessary from more basic job grouping or proficiency-level courses.

- <u>Example application of characterizing Instructional Courses</u>:

    - <u>General orientation to using the hospital EOP</u>: This "all personnel" instruction should be designed and provided to every new employee and hospital staff member as a component of his or her employment orientation (e.g., hospital orientation for temporary employees and for resident physicians and others rotating through a facility). A small laminated pocket card, often referred to as a job aid, may be helpful for providing a reminder of key concepts and actions to be taken should the EOP be activated. The knowledge elements (to an operational level of proficiency) of the All Personnel (core) competencies can be addressed during these general orientation sessions, particularly AP-R9, "Perform your specific roles and responsibilities as assigned in the healthcare system's Emergency Operations Plan (EOP) and the appropriate Incident Action Plan (IAP) in order to support the system's objectives. This would, therefore, be a type of "**all personnel primary education for core competencies**." Training that conveys the skill elements for the core competencies may follow this general orientation.

- Operations-level decontamination team training: A course conveying an operations-level proficiency for a hospital DECON team's competencies commonly includes education (presentations on chemical hazards, principles behind personal protection, and other information), skills training, (donning and doffing personal protective equipment, mobilizing the DECON facility, proper washing of incapacitated victims, and others). It also includes drills (scripted scenarios) where the learned skills and knowledge (such as recognizing an incident, mobilizing the DECON team and area, receiving and decontaminating victims) are practiced and demonstrated.

Certification based upon post-course evaluation can be used to track "competent" personnel.

- "Train-the-trainer" instruction: This is a special type of instruction and faces the same difficulties described earlier in the "expert-level instruction." Successful strategies for training instructors include carefully selecting participants, providing a series of expert-level instruction sessions, and maximizing response experience through exercises and actual incidents. The new "trainers" then teach the material with proctors providing formative evaluations (see Lesson 4.2.1). This is an important issue for the emergency program manager, and is a critical factor to developing a full-spectrum "in-house" instructional program.

'Certification' documents successful completion of an instructional activity and is important in verifying personnel qualifications. They do not necessarily provide evidence of 'behavior' change or 'results' as described by some nm ISD

Instruction-related certification, qualifications, and record keeping:

Certification is used to indicate qualifications. The relationship between qualification and competencies and other terms is discussed in detail in

Lesson 1.3. Some qualifications are related to successful completion of specific education and/or training, and these are commonly documented through a **certification** process.

- Range of certification formality: The use of certificates and certifications covers a broad spectrum.
  - Some certifications, such as those indicating certification in medical specialties, may be very formal and prescriptive, and are mandated by local, State, Federal regulations or professional disciplines. Many of these certification programs are intended to be indicative of acquired competencies.
  - Other certifications are less formal, merely indicating that a completion certificate was issued, and serve primarily as a method for emergency program managers to track the completion of required primary and refresher course completion by system personnel.
- Certification and demonstration of performance qualifications: Useful, professional certification of successful education and/or training generally requires a distinct evaluation of the student within or after the instructional session. The student should successfully demonstrate the indicated mastery (i.e., level of proficiency) of the curriculum's learning objectives. These evaluations should be largely performance-based, in contrast to traditional methods limited to primarily a written test. For example, appropriately filling out a relevant ICS form may provide more predictive value of performance than answering questions about the form on a post-test.

Certifications can also help with overall instructional strategy (tracking of personnel instruction, maintenance of personnel instruction, etc.).

- Certification and learning objectives: Since the learning objectives in the instructional curriculum are derived from underlying competencies, "certification" is assumed to indicate that an individual possesses the competencies upon which the specific instruction was developed. As noted in the preceding section on instructional design, the certification should indicate a level of proficiency designated for each competency. This emphasizes the importance of attending to detail when developing learning objectives from the pertinent competencies.
- Certification interval: Most certifications are for a designated time interval, after which the certified individual may "re-certify." This is usually accomplished by demonstrating, through evaluation, that the individual has maintained the indicated knowledge, skills, and abilities.
- Refresher instruction and re-certification: This is designed to maintain the requisite knowledge, skills, and abilities. Evaluation after

completion of these activities provides an opportunity to certify that these components of competencies are being adequately maintained (i.e., "re-certification").

- Strategic planning and certification: When conducting strategic planning for EM program instruction, the required and expected certifications, their duration, their recertification methods, and the emergency response and recovery positions needing certification should all be considered. Number and timing of instructional courses, recruitment of participants, and tracking of active certifications should all be incorporated into the strategic plan at this time.

- Maintaining certification records: Record keeping of each instructional activity and the "trained" individuals (sorted by the certification interval) should be functionally oriented. This assists with efficient development and evaluation of the strategic instructional plan and in developing any follow-on instructional activity. Record keeping must also meet the legal requirements of applicable laws, regulations, and the organization's legal risk managers.

Enhancements to instructional methods

Some considerations that enhance any specific instructional activity include:

- Scenarios: Scripted scenarios may be used, as in tabletop exercises, but with props that promote realism (model "disaster towns" or "disaster hospitals," slide presentations, video injects, etc.).

- Training caches: Instructional designers should consider the acquisition and maintenance of separate (but similar) response equipment and supplies for instructional activities. The use of this "training cache" for instruction will promote familiarization with the specific equipment and supplies without impacting true operational readiness by using the response cache.

- Simulations: With very little effort, instructional designers can add characteristics to instructional activities that prompt realistic "play" during training and drills. Examples include the use of HAZMAT simulants (e.g., safe alternatives that simulate the physical presence of hazardous contaminants), time pressure, noise, aggravated "patients," and other prompts. These can also be employed during exercises.

* Maximizing instructional opportunities: Emergency Managers may find that instruction provided in unconventional settings may be useful. For example, instructional material related to the EOP can be provided through "regular" channels and activities of the organization. Examples include: writing a column in the organization's newsletters, adding emergency response training material into training for everyday practices, and staffing an emergency response training booth at employee fairs to distribute informational pamphlets, recruit responders, and provide short training sessions.

* Branding and promoting the EM program effort: Emergency program managers may consider activities that create and maintain interest/motivation in the EM program. For example, publicizing EM program activities and positive outcomes may be an effective method to provide recognition for involved personnel. Bringing in known outside authorities (senior EMS or fire official, the local emergency manager or political leader, and others) as trainers or exercise observers or to speak at meetings and "recognize" the organization's emergency preparedness efforts may promote interest and understanding. Finally, simple but captivating slogans can be used to reflect activities, as long as they are professional and EM/ICS consistent.

"In-house" versus vendor-supplied ("outside") instruction

Healthcare emergency managers have a wide range of instructional courses available from outside vendors and from grant and governmental sources. Courses developed and conducted by organizational personnel ("In-house instruction") is another option. The pros and cons of each are important to understand.

Though significant effort is required to develop "in-house" instruction, it has many advantages over vendor-supplied instruction.

* Achieving true operational proficiency: Operational-level instruction implies that the personnel are "operationally proficient" on their own response and recovery systems (i.e., the term "demonstrable on the job" in the competency definition means on "their" job). This can be difficult for outside vendors to accomplish with the vendor's equipment, facilities, and lack of understanding of the organization's EOP.

* Benefits of in-house instruction: The initial instructional analysis, design, and development are effort-intensive and may require internal and/or outside expert consultation. While difficult to initially develop, in-house instruction may, in the end, be much less expensive and more efficient. Benefits of in-house instruction include:

- Since the instructional activity is conducted by the organization's personnel, it will incorporate the inherent characteristics of the organization's architecture, politics, traditions, EOP guidance and other important factors (both for response and during preparedness). This effort, therefore, may result in tailored, more effective instruction that is specific to the healthcare facility and it's EOP.

- As the instructional activity is "owned" by the organization, methods for scheduling instruction and maintaining competencies may be configured to maximize participation while limiting the expense of overtime compensation and additional staffing. Course availability is fully under healthcare system control.

- The course can be changed inexpensively as the EM program evolves, as new findings from the HVA emerge, or in response to evaluations indicating improvement is needed.

- An in-house "training cache" is owned by the organization and therefore likely to be consistent with equipment (brand, type, how it is stored) to be used during actual response. There is little value in providing instructional activities that use vendor supplied equipment, if that type of equipment is unavailable to the organization during actual response. Unfortunately, this is currently a common phenomenon in government-provided training initiatives.

- Developing and maintaining in-house instructional programs promotes the development of "resident experts" – personnel within the organization who achieve an expert level of proficiency across a wide range of EM program and response/recovery competencies. This provides immense value during all EM program activities and may be especially valuable during emergency response.

The "in-house" approach, therefore, may be the most cost-effective method over the long term for developing, evaluating, and maintaining the knowledge and technical skill levels of hospital personnel working individually or in teams.

- Regulations and in-house instruction: Regulatory agencies allow and even encourage hospitals to design, develop, and implement in-house instructional activities that meet regulatory mandates. In the recent past, regulatory agencies and accreditation bodies have taken a more proactive stance in assisting hospitals with this guidance (see example from OSHA in Textbox 1.5.8.5).

"In-house" instructional activity is promoted by many regulatory agencies.

Textbox 1.5.8.5

Guidance by Regulators: Example

OSHA BEST PRACTICES for HOSPITAL-BASED FIRST RECEIVERS OF VICTIMS from Mass Casualty Incidents Involving the Release of Hazardous Substances[337]

"Training requirements for First Responder Operations Level appear under 29 CFR 1910.120 (q)(6)(ii), which indicates a minimum training duration of 8 hours and outlines topics to be covered (competencies the employee must acquire). Both the required competencies and training time were recently confirmed in an interpretive letter (OSHA, 2003).[338] **OSHA, however, allows these topics (but not the minimum training time) to be tailored to better meet the needs of first responders** [emphasis added]. For example, the training might omit topics that are not directly relevant to the employee's role (e.g., recognition of Department of Transportation placards), but instead should include alternative training on hazard recognition (e.g., signs and symptoms of contamination or exposure), on decontamination procedures provided by the hospital, and on the selection and use of PPE (OSHA, 1992c). Training that is relevant to the required competencies counts toward the 8-hour requirement, even if the training is provided as a separate course. For example, training on PPE that will be used during victim decontamination activities may be applied towards the 8-hour minimum Operations Level training requirement, regardless of whether the PPE training is conducted as part of a specific HAZWOPER training course or as part of another training program (OSHA, 1992c).

"The employer must certify that personnel trained at the "First Responder Operations Level" have received at least eight hours of specific training (which can include Awareness Level training, PPE training, and training exercise/drills), or have had sufficient

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[337] U.S. Department of Labor/ Occupational Safety & Health Administration. *OSHA Best Practices For Hospital-Based First Receivers Of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances*, *(C.0) Training First Receivers* (2005); accessed March 26, 2010 at: http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html#c0

[338] U.S. Department of Labor/ Occupational Safety & Health Administration. *OSHA. 2003. Letter of Interpretation Addressed to Mike Bolt, Re: HAZWOPER training requirements for hospital staff whole decontaminate chemically contaminated patients. April 22, 2003;* accessed March 26, 2010 at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=24605

experience to objectively demonstrate competency in specific key areas. Refresher training must be provided annually and must be of sufficient content and duration to maintain competencies. **Alternatively, the employee may demonstrate competence (i.e., skills) (OSHA HAZWOPER 29 CFR 1910.120(q)(6)(ii))** [emphasis added]. Participation in training exercises/drills is recommended to ensure competency during initial and refresher training. Available at:

http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html

- Benefits of vendor-supplied instruction: This approach to instructional courses also has benefits.

Vendor-supplied instruction is readily available across a wide range of topics.

  - Vendor-supplied instruction is readily available across a wide range of topics.
  - With careful selection, emergency managers can find vendors with high quality products and significant expertise in the relevant topics.
  - Vendor-supplied courses (e.g., train-the-trainer courses) can be helpful in developing the necessary level of expertise for in-house personnel who can then develop their own courses or adapt (with permission) the vendor's course to their situation.
  - Some vendor-supplied instruction can be conducted on the organization's premises with in-house equipment and supplies, providing the opportunity to become operationally proficient with the organization's response resources.
  - Vendor-supplied instruction can be helpful in conveying the importance of certain topics to senior organizational personnel, since select outside vendors may have name or expertise recognition that in-house personnel have not achieved with senior executives.

- Evaluating vendor-supplied and other "outside" training: Proposed vendor products and other available instructional modules should be evaluated to assure the indicated level of instruction is indeed provided. If the instruction is billed as "operational level" instruction, it should mean the graduates of the training are operationally proficient on the systems that the healthcare organization uses for the activity, not just what the vendor uses during training. When soliciting education and training proposals from outside training vendors, the desired proficiency levels for instructional activities, and the competencies to be conveyed, should be carefully defined in the solicitation. In this manner, vendors can be held accountable to achieve the expected level of performance in successfully trained participants.

- <u>Managing vendor-supplied and other outside instruction</u>: When using vendor-supplied and other outside instructional modules, the instruction might require modification by EM personnel through introductory or follow-on sessions that customize the vendor information to the specific facility's context. For example, the vendor's instructional material and training session for its equipment or supplies is commonly presented to personnel as "in-service" training. Vendor-supplied in-service may be a valuable instructional opportunities, but generally is not equivalent to stand-alone, operational-level instruction. This may be improved by adding an introductory session, conducted by the organization's EM or other relevant personnel, to convey the specific healthcare system orientation for where and how the in-service "fits" into pertinent EOP guidance. This orientation may explain where the product will be used, where it is stored, and the strengths/limitations of the product in relation to emergency response and recovery operations. This information is not likely to be provided by vendors (especially limitations of the equipment) and so should be presented by appropriate in-house personnel.

A template of the ISD process applied to the healthcare facility EM program is provided for the reader's consideration.

<u>A Template Summary of the ISD Approach</u>

<u>For each new or "under revision" instructional activity:</u>

- Analyze
    - Review relevant personnel assignments to EOP positions of responsibility and/or authority.
    - Review the EOP (including annexes, appendices, service plans, and job aids) to identify relevant job groups, function-specific elements, and individual positions to identify their related competencies that should be covered by the target instruction.
    - Review the Hazard Vulnerability Analysis (HVA) to identify priorities across hazards, and risk elements common to multiple hazards, that should be addressed by the proposed instruction.
    - Review evaluations from prior relevant instruction, and from relevant exercise and incident After Action Reports. Also review

any other system evaluations, together with relevant organizational recommendations for improvement.

- Review regulatory requirements (e.g., Joint Commission, OSHA) that could impact training content, length, and frequency.
- Review constraints (budgetary and others).
- Review inter-organizational agreements for commitments that may be relevant to the training, such as the external requirement of providing contracted medical back-up to a chemical plant.

- Design
  - Establish realistic and achievable overall education and training learning objectives for the activity that supports the results of the above reviews and best contributes to the continuous improvement of the EM program and EOP.
  - Determine the boundary conditions for conducting the instructional activity, based upon availability of resources and personnel, willingness and availability of other organizations to participate, regulatory guidance, amount of time to prepare, and other conditions identified in the analysis phase.
  - Finalize the instructional learning objectives as constrained by the boundary conditions.
  - Select an instructional scenario (as appropriate) that is consistent with the results and final prioritization in the HVA.
  - Select the most appropriate type of instructional method to achieve the learning objectives.
  - Project the expected initiation date for instruction to commence, given the factors considered above.
  - Determine the instructional setting, acceptable length of instructional sessions, and timing to minimize impact on organizational staffing but still achieve the instructional learning objectives. See Textbox 1.5.8.6 for design strategy recommendations.

Textbox 1.5.8.6

Addressing Efficiency in Instructional Design

The instructional activity should, when feasible, include all personnel positions within a specific function (i.e., teach the competencies required for all positions within that function). This will enhance time efficiency and the participation by all personnel and will promote team-building within the function. To accomplish this, the curriculum strategy can be to address the competencies common to all of the function's positions in a general session, and then use breakout sessions to teach the remaining, very position-specific competencies.

- Develop
  - Establish the evaluation requirements and guidelines for evaluating the instructional activity.
  - Develop guidelines for education and training evaluation.
  - Identify, select, and prepare personnel who will conduct and evaluate the instructional activity (e.g., Instructional director, instructors, and staff).
  - Arrange for and prepare any actors, such as simulated victims, if useful in meeting instructional objectives; for example, during instructional drills (see the section on exercise actor/victims in Lesson 4.2.4).
  - Determine and arrange for instructional facility and its logistics.
  - Develop the instructional script and prompts as indicated.
  - Develop all relevant instructional materials.
  - Conduct a safety-focused review of the "developed" instructional activity.
- Implement
  - Develop the instructional management plan, including assignment of specific responsibilities and timelines.
  - Distribute the instructional management plan as indicated.

  - Check for potential scheduling conflicts well before the instructional dates to identify and resolve problems.

  - Check all logistical arrangements sufficiently before the instructional session dates to resolve problems.

  - Remind participating personnel to review their EOP responsibilities and accomplish any pre-requisites prior to attending the instructional activity.

  - For instructional activities that can create realistic concerns for patients and proximate non-participants, make provisions to reassure these groups (see the section on patient reassurance during exercises in Lesson 4.2.4).

  - Initiate the activity consistent with instructional learning objectives.

  - Continually monitor the instruction for safety issues and be prepared to terminate the activity for safety violations (see the section on exercise safety in Lesson 4.2.4).

- Evaluate

  - Conduct and manage the Reaction and Learning evaluation activities (see textbox 4.2.2.2 earlier in this lesson) and other evaluation indicated for this instructional activity.

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Lesson 1.5.9 Preparedness Planning: Personal and Family Preparedness

Lesson Objectives

- *Differentiate between system and individual preparedness.*
- *List the purpose and objectives of a personal and family preparedness plan.*
- *Explain the purpose and general content of a personal "go kit."*
- *Explain how COOP may impact personal and family planning.*

Introduction

Preparedness to deal with the impacts of emergency events is the responsibility of each healthcare system employee with a role in the EOP. The organizational level EM program provides the structure for overall planning and action, but it requires the availability and efforts of the healthcare system workforce for successful emergency response and recovery.

As discussed earlier, individual preparedness by healthcare system personnel is also critical to assuring that necessary staffing is available and able to focus upon their potentially complex and demanding emergency response duties. To have the ability to meet these job-related responsibilities, healthcare system responders must first address the needs from their personal situation, particularly the safety and well-being of their families. A simple, but well-thought out and maintained personal and family preparedness plan can assist in rapid resolution of these important concerns.

A significant component of preparedness includes efforts to ready the organization's personnel to address individual and family issues. This promotes organizational resiliency.

Responsibility

Emergency response and recovery operations, by their very nature, can be extremely stressful events for affected patients and employees, and families of both. Healthcare system employees may be required to report to their work site and provide services related to emergency response and recovery operations in addition to their normally assigned duties. Healthcare system supervisors, co-workers, and the customers (patients) share an expectation that medical services will proceed uninterrupted and that medical needs generated by the incident impact will be addressed. Preparedness planning should therefore be recognized as a shared responsibility between healthcare system leadership and system personnel. In addition to reporting to their normal work site, the nature of the emergency incident may require personnel to re-locate for extended periods of time, to either participate in Continuity of Operations (COOP) or to assist other medical facilities in response.

Preparedness Resources and Templates

Personal preparedness initiatives are contained in multiple resources. A common theme is the preparation of items that the individual may need during incident response.

Numerous resources are publicly available to assist in the development of a personal and family plan. They include the American Red Cross,[339] Department of Homeland Security,[340] local and State government emergency management Websites,[341] and others. The more generic topics are commonly addressed (emergency telephone numbers; preparedness for persons with special needs; family emergency plan; emergency supply kits; pet preparedness; common emergency protective actions) and are applicable to all incidents. As an example, the American Red Cross Family Disaster Planning Website lays out the following four-step approach to personal and family planning:

1. Be informed: learning about hazards and family personal vulnerabilities.
2. Make a plan: a set of actions and supporting information for emergency situations, plus guidance for practicing the plan.
3. Assemble a kit: develop a cache of emergency supplies for the home, vehicle, and other family sites.
4. Maintain your plan and kit.

A point requiring special emphasis is the development of a family communication plan as part of the overall personal preparedness plan. The need to communicate with loved ones during an emergency incident is a basic human requirement. Experience has shown that local communication via landline telephone and/or cell phone can be very difficult for widespread events and that calling long distance (out of area) may be more successful. Each employee's personal preparedness plan should include the telephone numbers for a person out of the local area that can serve as a point of contact for family members. The American Red Cross Website referenced above provides wallet-sized Emergency Contact Card that can be used to list these contact numbers for the use of all family members.

Additionally, family preparedness should include immediate actions for:

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[339] American Red Cross. Preparing and Getting Trained, accessed March 22, 2010 at: www.redcross.org/services/prepare/0,1082,0_239_,00.html

[340] U.S. Department of Homeland Security. Ready: *Prepare, Plan, Stay Informed*; accessed March 22, 2010 at http://www.ready.gov/

[341] For example, Florida Department of Health & the Agency for Persons with Disabilities. *The Family Preparedness Guide*; accessed March 22, 2010 at: http://www.doh.state.fl.us/DEMO/php/familypreparequide-eng07.pdf

- Personal protection in an emergency situation.
- Securing the home, including utilities.
- Provisions for primary and alternate points of assembly/meeting.
- Addressing disabilities in escape routes or shelter-in-place actions for impaired family members.
- What each family member should do if they are away from their residence or point of assembly (i.e., remain where they are or try to reach their point of assembly).
- What should be done to secure their residence to make it as safe as possible.
- What supplies (food, water, supplemental means of preserving and preparing food, etc.) should be available.
- What to do with pets.
- How to communicate with extended family and others.

The previously mentioned references provide extensive checklists and recommendations that can be tailored to meet the specific needs of each family. It must be emphasized, however, that regardless of the level and detail of these family and personal plans, they must be understood by each member of the family and periodically be reviewed and practiced if they are to meet their intended purpose.

Personal "Go Kits"

Supplementing the personal and family plan, each individual should maintain their own "go kit" (also called "stay kit," "hot kit," and multiple other terms), which contains personal supplies that emergency responders may need to accomplish their emergency response and recovery roles. In planning this kit, it is assumed that the stay will extend beyond a usual work shift and potentially not allow a return home for a protracted period of time (most sources recommend a "go kit" that will provide support for up to 72 hours for healthcare workers). A "go kit" should reflect its owner's personal circumstances: usual personnel position, potential emergency response and recovery roles and responsibilities, medical conditions, personal preferences, and other considerations. What is important is realistically matching the contents of the kit to each individual's personal requirements and circumstances. The above-listed and referenced sources of information provide some guidance that can assist you in building a personalized "go kit."

Personal go kits can contain multiple items such as the generic (e.g. flashlights) to the more individual specific (e.g. prescription medications).

Some of the more commonly recommended items for a personal "go kit" include:

- Bottles of water

- Non-perishable food such as energy bars and sealed survival meals
- Personal medications
- A flashlight (compact flashlights that allow recharging the battery by manual pumping are now available)
- Copy of the family communication plan
- Whistle or other signaling device
- Extra set/sets of undergarments and clothing
- Sanitary items
- Comfortable walking shoes
- Money, including change to use in vending machines and pay telephones
- Spare eye glasses or contact lens
- A local map.

As is the case with personal and family preparedness plans, no one standardized “go kit” items checklist fits the needs of every individual. In the aftermath of the 9-11 attacks, many vendors developed and sold high-priced survival equipment like individualized breathing apparatus, specialized food and other items to organizations and individuals. This did little to contribute to safety and their ability to participate in response and recovery operations. A common sense approach, stressing each individual’s needs balanced by financial, physical space for storage, and maintenance realities should result in a “go kit” that achieves its objective.

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