Standard Guide for
Hospital Preparedness and Response[1]

1. Scope

1.1 This guide covers concepts, principles, and practices of an all-hazards comprehensive emergency management program for the planning, mitigation, response, recovery, and coordination of hospitals in response to a major incident.

1.2 This guide addresses the essential elements of the scope, planning, structure, application, and coordination of federal, state, local, voluntary, and nongovernmental resources necessary to the emergency operations plan for a hospital.

1.3 This guide establishes a common terminology for hospital emergency management and business continuity programs necessary to fulfill the basic service requirements of a hospital.

1.4 This guide provides hospital leaders with concepts of an emergency management plan, but an individual plan must be developed in synchrony with the community emergency operations plan and the National Incident Management System.

1.5 This guide does not address all of the necessary planning and response of hospitals to an incident that involves the near-total destruction of community services and systems.

1.6 For the purposes of this guide, the definition of hospital will be the current definition provided by the American Hospital Association for an acute care facility.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 *NFPA Standards:*[2]
NFPA 1600 Standard for Disaster/Emergency Management and Business Continuity Programs

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NFPA 1994 Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *all-hazards, adj*—hazard is an inherent property of an event, product, or object that represents a threat to human life, property, or the environment. In this context, all-hazards refers to any incident or event that could pose such a threat.

3.1.1.1 *Discussion*—These may include special equipment and processes that are used less frequently on a daily basis and require routine training to be most effective during a major incident.

3.1.2 *basic societal functions, n*—those basic functions within a community that provide services for public health, health care, water/sanitation, shelter/clothing, food, energy supply, public works, environment, logistics/transportation, security, communications, economy, and education.

3.1.3 *business impact analysis (BIA), n*—management level analysis that identifies the impacts of losing the entity's resources by measuring the effect of the resource loss and escalating losses over time to provide the entity with reliable data upon which to base decisions concerning hazard mitigation, recovery strategies, and continuity planning.

3.1.4 *capacity, adj*—capability at a given time for a hospital to provide a given service that is distinct from capability, which defines an ability to provide a service under normal operating conditions.

3.1.4.1 *Discussion*—A facility may have the capability to treat acute major incident patients in a cath lab, but if a critical resource is missing at the time of a disaster (for example, personnel, equipment, space, or electricity), the facility would not have the capacity to care for such a patient at that time when there is a need.

3.1.5 *communications systems, n*—those processes and resources (physical, procedural, and personnel related) that provide information exchange during an identified major incident.

3.1.6 *community/region, n*—that area in which a hospital provides health services and basic societal functions.

3.1.7 *continuity of essential services, n*—services that hospitals provide as a vital daily function that must be maintained

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as long as possible and then restored at the earliest opportunity after managing the necessary elements of the emergency incident. This is a business continuity planning focus.

3.1.8 *damage assessment, n*—appraisal or determination of the effects of the disaster on human, structural, economic, and natural resources.

3.1.9 *disaster, n*—sudden calamity, with or without casualties, so defined by local, county, state, or federal guidelines; before a disaster declaration, a disaster is an event that exceeds (or might exceed) the resources for patient care at that time, for a community, a hospital, or both.

3.1.9.1 *Discussion*—The definition of casualty is expansive and could include acute injuries, illnesses, or deaths, exacerbation of chronic medical conditions as a result of poor access to primary care following the disaster (disaster-related acute major incident), and post-traumatic stress disorders. A disaster could also include sustained infrastructure incapacity and the inability to access necessary external resources and supplies.

3.1.10 *fatality management, n*—processes designated by existing plans or local officials overseeing fatalities from an incident (medical examiner or coroner) to organize, coordinate, manage, and direct manage incident fatalities and identify temporary morgue facilities.

3.1.10.1 *Discussion*—Fatalities that occur during the time of the incident are managed in uniform fashion, whether the deaths appear connected to the incident or not.

3.1.11 *hazard vulnerability analysis (HVA), n*—process by which a hospital's personnel identify real or potential hazards that would affect hospital operations, particularly those with negative implications for health care, and identify internal capabilities and community preparedness to address those hazards and, in a region of health care providers, this may include a needs assessment as a preliminary survey of real or potential hazards to a specific group of hospitals.

3.1.11.1 *Discussion*—This will be accomplished with a systematic approach to the probability and consequence of hazards and events that threaten the continuity of a hospital's business operations. This would normally consist of determination of the likely and potential hazards to the operations of the hospital, an evaluation of the vulnerability of the hospital to those hazards, and determination of the resources necessary to reduce those hazards and vulnerability. The analysis provides the basis for establishing relevant major incident management plans and should be coordinated with local or state authorities, or both, and regional health care facilities as appropriate.

3.1.12 *hospital, n*—health care institution with an organized medical and professional staff and inpatient beds available around the clock, whose primary function is to provide inpatient medical, nursing, and other health-related service to patients for both surgical and nonsurgical conditions and that usually provides some outpatient services, particularly emergency care, for licensure purposes.

3.1.12.1 *Discussion*—Each state has its own definition of hospital, which affects licensing under laws of that state.

3.1.13 *hospital emergency operations center (HEOC), n*—(also known as a command center) designated area of the hospital that serves as a meeting area, with strategic and tactical support for the incident command system/incident management system.

3.1.13.1 *Discussion*—Reference to the HEOC will avoid confusion with the community/county EOC. The EOC must have adequate technical capability and personnel to support the operation of the incident and the hospitals response.

3.1.14 *hospital evacuation, n*—evacuation of a hospital refers to those actions by medical staff to remove inpatients, outpatients, and staff physically from the location of a hazard, thus interrupting the pathway of exposure and includes evacuation within the facility (horizontal or vertical) and away from the facility.

3.1.14.1 *Discussion*—Evacuation is a short-term or long-term protection strategy. An alternative short-term protection technique may be sheltering, but in some circumstances (earthquake-damaged hospital), it would need to be to another safe structure.

3.1.15 *hospital major incident, n*—major incident is any event that approaches or exceeds the capability of a hospital or health care organization to maintain operations or requires significant disruption to the routine operations of the facility to address.

3.1.15.1 *Discussion*—The definition may be institution-specific since hospitals on a daily basis operate with different resources and capabilities to respond to different crises.

3.1.16 *hospital management (group supervisors/leaders/managers) , n*—qualified personnel who control a specific department, unit, area, or task assignment.

3.1.17 *hospital mutual aid, n*—coordination of resources, including but not limited to: facilities, personnel, vehicles, equipment, supplies, pharmaceuticals, and services, pursuant to an agreement between hospitals and other health care organizations, providing for such interchange on a reciprocal basis in responding to a major incident or disaster.

3.1.18 *hospital surge capacity, n*—ability of a hospital to expand rapidly and augment services in response to one or multiple incidents.

3.1.18.1 *Discussion*—This response is under the control of the facility's emergency management plan and may include integration with regional authorities responsible for processes to manage and provide logistical and resource support to manage the patient influx.

3.1.19 *incident command system (ICS), n*—resource management system identified by a chain of command that adapts to an emergency event; the system adopted by the hospital should follow accepted ICS processes and be compatible with the National Incident Management System.

3.1.19.1 *Discussion*—ICS contains common terminology, individual ICS position responsibilities, integrated communications, modular composition of resources, unified command structure, manageable span of control, consolidated action plans and resource management, and plans for termination and restoration of business continuity. The system allows emergency responders from hospitals and other emergency response organizations to coordinate activities with familiar management concepts and request and implement mutual aid.

3.1.20 *incident commander, n*—individual responsible for the overall management and coordination of personnel and resources involved in a major incident.

3.1.20.1 *Discussion*—With a hospital event, the hospital incident commander is that official within an entity (for example, hospitals or group of hospitals) who serves as the EOC executive and coordinates the assets of the entity in the response to an event. The hospital incident commander should be the best qualified depending on the nature of the incident. This may be the senior physician on site, a department head, a nursing or house supervisor, or a hospital administrator. If the scope of the incident involves more then the hospital alone, the community official responsible for community response may be the incident commander of record.

3.1.21 *incident management system (IMS), n*—in emergency management applications, the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure with responsibility to accomplish stated objectives pertinent to an incident effectively.

3.1.21.1 *Discussion*—The system identifies management responsibilities and establishes policies and procedures for coordinating emergency response, business continuity, and recovery activities across hospital departments, outside agencies, and jurisdictions and that maintains compliance with state or federal regulations. The incident command system is an integral component of the incident management system.

3.1.22 *major incident, n*—this is defined within the context of all-hazards preparedness as any event that approaches or exceeds the capacity of a hospital or health care organization to maintain operations or requires significant disruption to the routine operations of the facility.

3.1.22.1 *Discussion*—A major incident may be defined differently for an individual hospital, a system of hospitals operating as one entity, or a group of independent hospitals that have a regional responsibility for planning and response. It is essential that each hospital plan for incidents that could occur at any of these levels.

3.1.23 *major multiple casualty incident, n*—(also known as a mass casualty incident) incident producing large numbers of casualties approaching or beyond local health care capacities.

3.1.24 *medical disaster, n*—type of significant medical incident that exceeds the patient care capacity of local resources and routinely available regional or multi-jurisdictional medical mutual aid.

3.1.25 *mitigation, n*—structural and non-structural activities taken to eliminate or reduce the probability of the event or reduce its severity or consequences, either before or following a disaster or emergency.

3.1.26 *multiple casualty incident (MCI), n*—type of significant medical incident for which local medical resources are available and adequate to provide for field medical triage and stabilization and for which appropriate local facilities are available and adequate for diagnosis and treatment.

3.1.27 *mutual aid, n*—prearranged agreement developed between two or more entities to render assistance to the parties of the agreement.

3.1.27.1 *Discussion*—Mutual aid agreements between entities are an effective means to obtain resources in emergency situations and augment surge capacity.

3.1.28 *mutual aid agreement, n*—cooperative assistance agreements, intergovernmental compacts, or other documents commonly used for the sharing of resources.

3.1.29 *personal protective equipment (PPE), n*—ensembles and ensemble elements to protect health care workers from contact with dangerous agents, including chemicals, biologic agents, blood, and body fluids, when providing victim or patient care during emergency medical operations; levels of PPE are defined in NFPA 1994. Also refer to Centers for Disease Control HICPAC Isolation Guidelines.

3.1.29.1 *Discussion*—This equipment would meet minimum design, performance, testing, and certification requirements for use during emergency operations, as identified from the HVA.

3.1.30 *preparedness, adj*—encompasses those actions taken before an incident to improve the capability and capacity to respond to a major incident within the hospital, community, or region. Preparedness efforts include, but are not limited to: assessments of hazards, risks, response needs, and vulnerabilities; planning functions; interagency collaboration; education and training functions; exercise activities; attaining minimal capacities; and necessary engineering controls or structural changes to facilities and do not include mobilization of response resources under circumstances other than simulated events.

3.1.31 *public health surge capacity, n*—ability of a defined community and its health care system to rapidly expand beyond normal services to meet the increased demand for medical care and public health that would be required to care for the casualties and fatalities resulting from a large-scale public health emergency or disaster; included are the resources for mass care, mass prophylaxis or vaccination, laboratory services, public information, mental health support, epidemiologic investigation, and law enforcement support.

3.1.31.1 *Discussion*—Initially, the response is coordinated by local public health/regional authorities. In some incidents, control will pass to regional, state, or federal authorities when outside assets begin arriving. This response facilitates actions to augment triage, treatment, isolation, fatality management, and resource flow to maximize the outcome of involved persons.

3.1.32 *public information officer (PIO), n*—individual designated by the incident commander or the hospital incident commander for the preparation and dissemination of factual and timely reports to the community, usually through the news media.

3.1.32.1 *Discussion*—This individual will benefit from training and appropriate qualifications.

3.1.33 *response activities, n*—those actions necessary to minimize negative effects of an incident and lead to recovery and restoration of essential hospital services.

3.1.34 *safety management, n*—function that identifies real or potential hazards, unsafe environment or procedures, and appropriate workforce protective measures at the incident, and ensures the appropriate corrective or preventive actions under

the authority of the incident commander or the hospital incident commander to ensure the safety of all hospital personnel and patients.

3.1.35 *shelter in place, n*—(also referred to as in-place protection) temporary short-term protection strategy in which the pathway from the hazard to the individual is interrupted by isolating the interior of a space from the exterior hazard.

3.1.35.1 *Discussion*—While evacuation can be maintained for days, sheltering typically becomes ineffective after a few hours. Once sheltering is implemented, a hazard assessment should be conducted to determine when any risks to occupants of the interior environment are expected to exceed those posed by exterior hazard(s).

3.1.36 *surge capability, n*—ability of a hospital or health care system to manage patients that require specialized health interventions as a result of one or multiple incidents, as may occur with contamination, irradiation, burn, chemical exposures, or injuries from natural, environmental, or terrorist-related events.

3.1.37 *surge capacity, n*—term defining the resources and processes to manage an influx of patients, from one or multiple incidents, that would present for health care evaluation and treatment.

3.1.38 *transportation section, n*—person or persons designated by the IC or the HIC responsible for the transportation of patients both within the facility and transfer external to the hospital.

3.1.39 *treatment section, n*—person or persons responsible for the definitive hospital medical treatment of patients in the hospital.

3.1.40 *triage, n*—process of sorting and prioritizing emergency medical care of the sick and injured on the basis of urgency and type of condition present and the number of patients and resources and the goal of triage shifts to "doing the most good for the most people" when patient care resources are exceeded.

3.1.40.1 *Discussion*—This differs from the day-to-day definition of triage in an emergency department, which is a fixed-site process for moving patients into the treatment area of the emergency department.

3.1.41 *triage section, n*—person or persons designated by competent authority that is responsible for triage and preliminary treatment of casualties.

3.2 *Acronyms:*
3.2.1 *ASR*—atmosphere supplying respirator

3.2.2 *BIA*—business impact analysis

3.2.3 *BT*—bioterrorism

3.2.4 *CBRNE*—chemical, biologic, radiologic, nuclear, or explosive events

3.2.5 *CDC*—Centers for Disease Control

3.2.6 *DHS*—Department of Homeland Security

3.2.7 *DMAT*—Disaster Medical Assistance Team

3.2.8 *DMORT*—Disaster Mortuary Operational Response Team

3.2.9 *DOD*—Department of Defense

3.2.10 *DVA*—Department of Veterans Affairs

3.2.11 *EC*—environment of care

3.2.12 *EMAP*—Emergency Management Accreditation Program

3.2.13 *EMS*—emergency medical services

3.2.14 *EMTALA*—Emergency Medical Treatment and Active Labor Act

3.2.15 *EOC*—Emergency Operations Center

3.2.16 *HEOC*—Hospital Emergency Operations Center

3.2.17 *HHS*—Department of Health and Human Services

3.2.18 *HIPAA*—Health Insurance Portability and Accountability Act of 1996

3.2.19 *HRSA*—Health Resources and Services Administration

3.2.20 *HVA*—hazard vulnerability analysis

3.2.21 *ICS*—Incident Command System

3.2.22 *IMS*—Incident Management System

3.2.23 *JCAHO*—Joint Commission on the Accreditation of Healthcare Organizations

3.2.24 *LEPC*—Local Emergency Planning Committee

3.2.25 *MaHIMS*—Medical and Health Incident Management System

3.2.26 *MCI*—multiple casualty incident

3.2.27 *MI*—major incident

3.2.28 *MIM*—major incident management

3.2.29 *MMRS*—Metropolitan Medical Response System

3.2.30 *NDMS*—National Disaster Medical System

3.2.31 *NFPA*—National Fire Protection Association

3.2.32 *NIMS*—National Incident Management System

3.2.33 *NMRT*—National Medical Response Team

3.2.34 *PAPR*—powered air-purifying respirator

3.2.35 *PIO*—Public Information Officer

3.2.36 *PPE*—personal protective equipment

3.2.37 *SAR*—supplied air respirator

3.2.38 *SCBA*—self-contained breathing apparatus

3.2.39 *SERT*—Secretary's Emergency Response Team

3.2.40 *SNS*—Strategic National Stockpile

3.2.41 *SOP*—standard operating procedures

3.2.42 *VMAT*—Veterinary Medical Assistance Team

4. Summary of Guide

4.1 This guide is based upon a body of knowledge on the preparation of hospitals to manage major external community or internal hospital incidents from all causes.

4.2 The body of knowledge on which this guide is based was drawn from a wide variety of sources, including federal, state, regional, and local organizations. Hospital organizations were major participants in the process.

4.3 The planning process includes all-hazards preparedness, based on a comprehensive hazard vulnerability analysis, in the response to an internal or external event. The hospital plan is intended to enhance the ability of a hospital to implement mitigation and business continuity activities.

4.4 The hospital incident management plan should provide for the establishment of a hospital incident command system with position descriptions that identify mission, functions, and responsibilities within the incident response organizational structure.

4.5 The hospital planning process should be directed at reducing morbidity and mortality, while preserving basic community service. The hospital's function in basic community service will be fulfilled by protecting the patients, visitors, staff, and facility while maintaining services, providing care to victims, and providing coordination and control with other agencies.

5. Significance and Use

5.1 This guide is intended to assist the leaders of hospitals in the design, planning, and response to be undertaken by hospitals and health care organizations to an event that necessitates the activation of an emergency operations plan.

5.2 This guide provides procedures to coordinate and provide a systematic and structured response to manage an incident.

5.3 This guide provides management tools that can assist in providing essential training objectives and decision-making models for hospital leadership and hospital regulatory agencies.

5.4 This guide will be as consistent as possible with the following existing industry standards: Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) Environment of Care (EC) standards, NFPA 1600, the National Incident Management System (NIMS), and the Health Resources and Services Administration (HRSA) Hospital Bioterrorism (BT) Preparedness Program.

5.5 Compliance with the JCAHO standards is of paramount concern to health care organizations. JCAHO's EC standards include safety, security, hazardous materials and wastes, emergency management, fire safety, medical equipment, and utilities management. The EC chapter addresses planning and implementation and measuring and improving activities, with education and training activities addressed in standards relating to human resources.

5.6 NFPA 1600 is highly regarded as a national preparedness standard. NFPA 1600 serves as the basis for the standard used by the Emergency Management Accreditation Program (EMAP) for state, local, and tribal governments.

5.7 The National Incident Management System (NIMS) was required for all federal departments and agencies as a part of Homeland Security Presidential Directive #5.[3] NIMS is also

required for state and local government entities who receive federal grant funds. This impacts hospitals (public and private sector) through participation in the HRSA Hospital BT Program as well as the JCAHO Incident Command System/Incident Management System requirement.

5.8 The HRSA BT program is important because one of its objectives is to set national levels of readiness for hospitals. These minimum levels of readiness, articulated for each of the critical surge capacity benchmarks, are achieved through coalitions of individual hospitals (districts). The HRSA BT program is based on creating effective linkages between the levels and entities within the Medical and Health Incident Management System (MaHIMS) to include individual facilities, coalitions, jurisdictions, intrastate, interstate, and federal support.

6. Comprehensive Emergency Management

6.1 The hospital must develop an Emergency Operations Plan (EOP) that addresses a variety of predictable and unpredictable events. The process of planning is a key element and assembling hospital and hospital system leaders is beneficial in itself. The next level of planning includes interface with local and regional emergency planning leaders. One element of an emergency management program is an EOP. It includes four elements: preparedness, mitigation, response, and recovery.

6.2 *The Planning Documents:*

6.2.1 *Purpose*—The Hospital Emergency Management Plan (the Plan) should be written to prepare hospital personnel to manage a major incident inside or outside of the hospital, or both, whether the facility is compromised by the incident or not. The Plan should be written to establish and facilitate the hospital's contribution to emergency organizations within the community, as well as its internal organization. This would include basic policies, responsibilities, and actions required for incident mitigation within the hospital, health care organization, community, or region. Plans should ensure that rapid medical assistance can be provided to persons requiring emergency care. Plans should describe an incident command structure for medical operations that coordinates medical care and uses of medical personnel and resources. The plan should be designed to be an extension of day-to-day service, facilities, and resources. Hospitals and health care providers (including community medical practitioners) must also be prepared to address other kinds of incidents likely in their communities, including those involving infectious diseases, that may be slower in onset but if uncontrolled could make the hospital a casualty of the event. The plan should address lengthy incidents that present management challenges in sustaining a response over a prolonged period of time and how resources will be directed in support of the health care system.

6.3 *Goal*—The Plan will result in a process that effectively manages an emergency, provides continuity of basic societal functions, and will minimize the following: physical damage to a hospital, loss of life, injury or illness of hospital personnel, and human suffering by persons affected.

6.4 Planning for major incident response should be a cooperative effort between hospitals and the community/region in

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[3] Office of the President, Homeland Security Presidential Directive #5, http://www.dhs.gov.

which they deliver basic community services, including other health care organizations.

6.5 *Planning for Public Health Surge Capacity*—The hospital should cooperate with regional health planners to address surge capacity and capabilities. The priority areas in this process are:

6.5.1 Ensure availability of medical equipment, pharmaceuticals, and supplies matched to the sites where care is being provided. The HRSA is requiring the states to develop antibiotic caches at each hospital to provide 72-h supplies for all hospital employees and their families. This and other regulatory elements of preparedness should be addressed.

6.5.2 Identify ways to augment hospital and other health care facility patient care capacity.

6.5.3 Ensure sufficient numbers of trained medical personnel to support victim management operations.

6.5.4 Ensure availability of pharmaceutical supplies, including the potential use of a regional CHEMPACK or the Federal Strategic National Stockpile (SNS), both federal assets managed through the CDC. Each state has a responsible SNS coordinator, who maintains information on pharmaceuticals and medical equipment in the SNS formulary. Access to this asset must be requested through the appropriate state emergency agency, typically through the regional public health body. This local public health body, and the hospital administrators, should maintain updated contact information for the state's SNS coordinator.

6.5.5 CHEMPACK is the forward placement of nerve agent antidotes in communities across the United States. The CHEMPACK materiel may be placed in hospitals or emergency management facilities. The decision to activate CHEMPACK assets will be a local one. Hospitals that house CHEMPACK assets should have staff trained in the use of nerve agent antidotes and should also have plans for the release and transport of CHEMPACK assets to other local hospitals and emergency responders in the event of a nerve agent attack.

6.5.6 Possess the tools to evaluate and expand capacities using community resources, state assets where available, industry, and private individuals appropriately trained to fulfill specific functions and federal resources that may be allocated to assist in incident management.

6.5.7 The hazard vulnerability analysis should indicate where hospitals must create surge capacity and expand capability to address likely events. This may involve the use of reasonable models.

6.6 *Objectives*—The essentials of an EOP include a concept of operations and a response plan:

6.6.1 Each hospital and health care organization should have a plan to provide for its own initial response for the surge of victims from an event and be an integral component in the community's response plan.

6.6.2 It is imperative that hospitals collaborate with other healthcare delivery entities in the development of additional surge capacity. These can include, but not be limited to, skilled nursing facilities, community health centers, clinics, urgent care centers, home care agencies, poison control centers, community medical practitioners, and other specialty care centers.

6.6.3 The Plan would outline the responsibility for the management of the disaster response while maintaining business continuity. There should be written criteria to assess current programs and develop, implement, and maintain measures to mitigate, prepare for, respond to, and recover from disasters and emergencies.

6.6.4 The hospital will manage the emergency and then restore essential services. As appropriate, the operations plan will provide for continuity of basic societal functions essential to sustaining the lives of the patients and staff.

6.6.5 Plans and procedures should be reviewed and revised regularly on the basis of actual events that occur in hospital operations, tabletop exercises, drills, simulated incidents, functional exercises, and full-scale community drills. An annual assessment of the overall EOP should be conducted at a minimum. This may include critiques of actual events in lieu of exercises.

7. Preparedness

7.1 Activities, programs, and systems are developed and implemented before a disaster/emergency and are used to support and enhance mitigation of, response to, and recovery from disasters and emergencies.

7.2 *Organizational Structure for Response:*

7.2.1 The Plan should address the role of the hospital, the relationship of the hospital to other response organizations in the community, and the necessary resources for each level of event and prepare for availability and updating of those resources. The plan should lead to a program of training for hospital personnel, both within their facility and jointly with other agencies in the community.

7.2.2 The Plan should define an overall incident organization based on a strategy of efficient and effective utilization of resources.

7.2.3 The Plan should address chain of command and its conversion to an Incident Command Structure (ICS), including transfer of authority of any officer or position, as well as the relationship of the hospital to the community response system.

7.2.4 The Plan should encompass the treatment of casualties and the continued operation of the hospital during the incident.

7.2.5 The concept should be to develop plans that facilitate an all-hazards approach and maintain equipment, supplies, pharmaceuticals, and personnel readiness for the more likely events based on a comprehensive HVA and to develop specific protocols and annexes to address the worst case incidents caused by chemical, biologic, radiologic, nuclear, or explosive events (CBRNE).

7.3 *Organization of Personnel Necessary for Response:*

7.3.1 The Plan should provide for delineation of responsibilities and authority for all involved response personnel and agencies.

7.3.2 The planning stage will include those efforts to define how hospital personnel are to respond to the incident and when staff are to report to the hospital.

7.3.3 If the hospital plan will use community resource personnel, the planning stage will include hospitals, health care

organizations, emergency response resources, community public health resources, and volunteer organizations to mitigate potential problems.

7.3.4 The Plan will identify credential issues to resolve them before the event.

7.3.5 There will be a process to track incoming mutual aid resources and, if necessary, to account for the credentials of responding personnel and their dedicated time.

7.3.6 Establish protocols for directing volunteer services that are necessary.

7.4 *Plan for Effective Response*—The Plan should provide for organization and implementation of the following during major incidents:

7.4.1 ICS;

7.4.2 Patient triage, treatment, and transportation areas, including the handling of special or sensitive populations;

7.4.3 Facility management, including utility systems affecting power, water, and air quality and availability;

7.4.4 Coordination with other hospitals, local/regional public health, and other responding agencies;

7.4.5 Coordination with any medical teams that will be operating outside the hospital;

7.4.6 Communications plan, including consideration of multilingual communications requirements;

7.4.7 Coordination with providers of psychosocial services; and

7.4.8 Development of appropriate patient care records.

7.5 *Preparedness Plans for Essential Materials*—The planning group will develop resource inventory lists of equipment, services, and personnel in the hospital, available through mutual aid hospitals, and within the community.

7.5.1 This includes pharmaceuticals, medical supplies, nutrition, linen, and industrial and potable water, including alternate sources. These would be outlined in the HVA.

7.5.2 This agreement should include necessary equipment loss replacement procedures, reimbursement for recoverable costs, and liability for damage or loss of equipment and injury to shared staff.

7.6 *Mutual Aid*—Mutual aid between hospitals and related organizations are an effective means to obtain resources in emergency situations and augment surge capacity.

7.6.1 Each hospital and health care organization should enter into mutual aid agreements with other local or regional providers of essential health care services, which may include other healthcare organizations, long-term care facilities, and clinics.

7.6.2 Mutual aid agreements should be in writing; reviewed by legal counsel; signed by a responsible official; define liability; and detail funding and cost arrangements for sharing equipment, services, and paid staff.

7.6.3 A hospital mutual aid agreement should also include the extent and limit of participation from other hospitals and related organizations, equipment and service providers, and other special resources.

7.6.4 A Plan for utilization of mutual aid should facilitate the access and utilization of local, state, and federal resources.

7.6.5 Mutual aid agreements can be invoked when an organization's capability to manage a situation has been exceeded. The hospital will have an activation plan for mutual aid. It should include plans to communicate the need to response organizations, and how to begin implementation of the aid.

7.6.6 *Termination and Documentation*—The Plan will define the method for ending the use of mutual aid resources and document the appropriate elements of utilization.

7.7 *Coordination of Community Resources:*

7.7.1 *Coordination*—Each hospital should have plans and procedures that facilitate interaction with other providers of basic community services. Communications with these organizations should be established on a regular basis to ensure an effective emergency response. This includes advance agreement on common terminology, codes, and processes to facilitate effective communication and coordination during an emergency. The hospital should effectively interact with the following organizations:

7.7.1.1 Other hospitals, healthcare organizations, skilled nursing facilities, community health centers, urgent care centers, home care agencies, clinics, community medical practitioners, poison control centers, and other specialty care centers;

7.7.1.2 Health department and mental health agencies;

7.7.1.3 Law enforcement agencies (local, state, and federal);

7.7.1.4 Fire services;

7.7.1.5 EMS agencies;

7.7.1.6 Local companies and businesses, especially those involved in the Local Emergency Planning Committee (LEPC) (the LEPC, organized under SARA Title III,[4] is one established method of interfacing with businesses, agencies, and organizations involved in hazardous materials preparedness);

7.7.1.7 Local suppliers of medical products;

7.7.1.8 Local pharmacies and pharmaceutical supply facilities;

7.7.1.9 Regional and federal care resources, including MMRS resources, CHEMPACKs, SNS, and other strategic health care delivery supplies;

7.7.1.10 Commercial and state laboratories;

7.7.1.11 Media;

7.7.1.12 Emergency management agencies of the local jurisdiction;

7.7.1.13 Specialty services such as CHEMTREC, HAZMAT teams (medical and mitigation), mine rescue teams, search teams, and other special emergency teams;

7.7.1.14 Social service agencies such as the American Red Cross, Salvation Army, churches, and religious and community service groups; and

7.7.1.15 City or county governments, including school districts.

7.8 *Governmental Relations*—The hospital and health care organizations' plans should conform to appropriate regional and state plans. This requires coordinated planning with basic societal functions within the community or region, or both. The

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[4] *SARA Title III Compliance Guidebook*, 1988, Government Institutes, Inc., ISBN: 0-86587-749-1.

hospital must take responsibility for protecting and managing its internal operations, but equally critical is the hospital's ability to develop and maintain contacts and coordinated plans with other organizations in the community or region, or both, so that the hospital can survive the incident and effectively serve the region. A well-done HVA will help a hospital to determine the types of organizations within the community or region, or both with which it should develop and maintain coordinated plans and processes (ambulatory surgery centers, long-term care facilities, mental health providers, public health departments, and so forth).

7.9 *State Government*—Each state has a unique chain of command and process for accessing state resources. Most states require state activation before federal resources can be accessed. Procedures for obtaining assistance from state resources are available, including resources of the National Guard.

7.9.1 *State Response Resources*—These teams are activated when calls are made to designated provider agencies and hospitals. The state office responsible for public health should be contacted regarding state resources.

7.10 *Federal Government*—Procedures are available for obtaining assistance from local installations of these agencies, including military resources, U.S. Weather Service, or National Park Service, and procedures for obtaining assistance through the state from federal agencies such as the Department of Health and Human Services (HHS), Department of Homeland Security (DHS), or the Environmental Protection Agency (EPA). Federal assistance will require the provision of a unified command system, so hospital planners should develop contingencies for that function.

7.11 *Federal*—The National Disaster Medical System (NDMS) is a federally coordinated system that will supplement responses when the incident overwhelms local and state capacity to respond. There are four NDMS partners, DHS, HHS, DOD, and Department of Veterans Affairs (DVA). NDMS may arrange for the transportation of patients to healthcare facilities outside the area affected by the event. Hospitals with NDMS contracts will maintain essential information on contacts, responsibilities, and coordinating relationships.

7.11.1 National Medical Response Teams (NMRTs) are large medical teams assigned to specific regions of the country and designed to be "wheels up" in 2 h to assist local communities in dealing with large casualties.

7.11.2 Disaster Medical Assistance Teams (DMATs) can be activated by the federal government during a disaster. DMATs are a federal resource and can only be activated through a request from the state government.

7.11.3 Other units of the NDMS that may be deployed to assist local medical community resources include Disaster Mortuary Operational Response Teams (DMORTs), Management Support Units (MSUs), and Veterinary Medical Assistance Teams (VMATS).

7.11.4 DMORTs assist in fatality management while VMATs assist in animal care. The National Foundation for Mortuary Care has recommended practices for mass casualty events.

7.11.5 MSUs support the NDMS units in the field. All federal public health assets will be managed by the Secretary's Emergency Response Team (SERT) deployed by HHS.

7.11.6 For further information on specifics related to their community, hospital planners should contact the HHS regional health administrators.[5]

8. Mitigation

8.1 The mitigation plan shall establish interim and long-term actions to eliminate hazards that impact the entity or reduce the impact of those hazards that cannot be eliminated. The hospital shall develop and implement a strategy to eliminate hazards or mitigate the effects of hazards that cannot be eliminated by:

8.1.1 The use of applicable building construction standards;

8.1.2 Relocation, retrofitting, or removal of structures at risk;

8.1.3 Removal or elimination of the hazard;

8.1.4 Reduction or limitation of the amount or size of the hazard;

8.1.5 Segregation of the hazard from that which is to be protected;

8.1.6 Modification of the basic characteristics of the hazard;

8.1.7 Control of the rate of release of the hazard;

8.1.8 Provision of protective systems, hardening, or equipment for both cyber or physical risks;

8.1.9 Establishment of hazard warning and communication procedures; and

8.1.10 Redundancy or duplication of essential personnel, critical systems, equipment, supplies, pharmaceuticals, information systems, operations, or materials.

8.2 *Mitigation of Essential Building Systems*—These services will include electricity, water, ventilation, fire protection systems, communications systems, fuel sources, medical gas and vacuum systems, and nutrition systems. Essential systems also include electronic systems for patient identification, treatment, imaging, disposition, and recordkeeping. Business continuity plans must be established that include appropriate redundancies.

8.3 Procedures should include, but not be limited to, the following:

8.3.1 Measures that are taken to disperse resources and personnel in a manner that will provide redundancy to ensure the entity can continue to function during emergency conditions;

8.3.2 Plans to address deployment procedures to relocate/replicate resources or facilities, increase protection of facilities, and inform and train personnel in protective measures;

8.3.3 Preparedness increased, based on the broadcast national or regional threat level;

8.3.4 Control of access to the area affected by the disaster/emergency;

8.3.5 Identification and credentialing of personnel engaged in activities in support of or at the incident;

8.3.6 Accounting for personnel engaged in incident activities;

8.3.7 Accounting for persons affected, displaced, or injured by the disaster/emergency;

8.3.8 Safe mobilization and demobilization of resources; and

8.3.9 Provision of temporary, short-term, or long-term housing, feeding, and care of populations displaced by the incident, including staff and staff families.

8.4 Investigate and document accidents and injuries to healthcare workers and other events that have occurred within departments, units, or areas of the hospital and recommend appropriate actions to eliminate or minimize risks.

8.5 *Safety*—The safety function monitors and assesses hazards and unsafe situations and develops measures to ensure personnel safety. Plans and procedures must ensure the protection of personnel, facilities, and resources so the entity(s) can operate effectively.

8.5.1 The Safety Officer is authorized to modify, alter, or terminate any unsafe actions and develop and maintain plans, policies, and procedures to ensure protection of resources, facilities, and personnel.

8.5.2 Advise incident command of special equipment, procedures, or teams needed to handle specific hazards. To the extent possible, these needs should be anticipated through the HVA.

8.5.3 Provide the safety portion of the EOP.

8.5.4 The safety function reports to the Incident Commander.

8.6 *Security Functions:*

8.6.1 The Plan will identify facility and local security resources that could function in the hospital environment and integrate with law enforcement functions.

8.6.2 Security forces must be able to secure the hospital facilities, or critical areas of those facilities, to facilitate incident management and patient care.

8.6.3 Develop and implement ingress and egress functions, including the appropriate use of signage.

8.6.4 Plan for safe movement of necessary supplies and other hospital resources.

8.7 *Surveillance Systems for Hospital Operations:*

8.7.1 This process may be used by local, state, or federal agencies to improve reporting of diseases, illnesses, and threats and the timeliness and accuracy of that reporting.

8.7.2 A portion of the mitigation plan includes the process of using epidemiologic methods to identify threats and to develop capacity.

8.7.3 Detection systems for surveillance monitoring are in investigational use, and hospital plans should consider future technology applications. Some hospitals may have an automated surveillance system as part of their information systems (demographics, laboratory, and so forth). Hospitals that have an automated concurrent surveillance monitoring system should use this function for timely assessment, evaluation, and reporting.

9. Implementation

9.1 Notification of a hospital and the sharing of detailed information regarding a major incident may initially be minimal. Once notified, an assessment of the validity of the information and current resource capacity should be conducted.

9.2 A decision must be made as to the level of response the hospital should activate. There may be multiple levels of activation, including standby or alert, full activation, and partial activation, including stages of response/management, termination, and recovery.

9.3 Patients from major incidents will self-transport, when able, to the closest hospital or to the hospital best known in the community for emergency care.

9.4 Ambulatory persons with "medically unexplained physical or behavioral symptoms" will likely comprise a significant portion patient load resulting from an event. This may include those persons with some symptoms and a perceived or actual exposure to a dangerous agent (chemical, biological, radiologic, or nuclear), but do not have (at that time) any objective illness or injury.

9.5 *Activation of the Hospital Plan:*

9.5.1 The Plan should provide for the levels of response and activation. There may be multiple levels of activation, including standby or alert, partial activation, and full activation.

9.5.2 The Plan will define who within the hospital has authority to activate using appropriate criteria.

9.5.3 Define what local authorities, if any, have the ability to cause the hospital plan to be activated.

9.5.4 Define conditions that will merit the upgrade to the EOP and the establishment of the hospital ICS. This will be done by refining the initial response to daily incidents, serving as a basis for managing larger incidents.

9.5.5 Define initial recognition of an unusual incident and early management priorities.

9.5.6 Define initial communications of a hospital major incident.

9.6 The decision to terminate the Plan shall be made by hospital leadership in coordination with the regional authority, where a regional plan has been in place.

9.7 In sustained events, there may be multiple levels of activation that occur over time, including standby or alert, termination, and recovery.

9.8 *Incident Command System:*

9.8.1 The Incident Command System (ICS) defines fundamental practices of hospital management and control of personnel and resources and should be compatible with NIMS.

9.8.2 This guide does not specify any individual or specific system of ICS, only one that conforms to regional planning, fulfills the requirements of DHS and NIMS, and most effectively manages a hospital's resources.

9.8.3 The ICS is a system designed to optimize the use of human and physical resources to manage an incident. It is not intended to replace an existing hospital operations plan as it relates to the day-to-day job functions/descriptions of the hospital.

9.8.4 In emergency situations, ICS personnel may organize an EOC. Not all incidents require an EOC. The EOC will be most useful when an incident requires a central location for information collection, display, coordination, documentation, and dissemination. Command communications are best performed face to face.

9.8.5 Hospital ICS training should address the organization of hospital resources. Some hospitals and groups of hospitals have developed a uniform version of hospital incident command.

9.8.6 ICS is integrated into sections including Operations, Planning, Logistics, and Finance/Administration.

9.8.7 *Operations*—The Operations section is in charge of the deployment of hospital personnel and resources and medical care of victims to deal with the issues and problems as they arise in the event.

9.8.7.1 Some incidents involving victim management or hospital evacuation, or both, shall require the Operations section to perform triage, treatment, and transportation functions.

9.8.8 *Planning*—The Planning section is responsible for future operations of the hospital during the event. If Operations is reacting to the event, then Planning is proactively developing tools for those reactions and anticipating problems that are not yet apparent. Planning shall prepare short/long-term objectives and strategic decisions for incident command, addressing staffing, patient information, patient tracking, developing the incident action plan, monitoring situation status, documenting the operation, managing, and interpreting incident-specific information. The Planning section is responsible for providing Operations with the information it needs to provide the best care possible and Logistics with the expected needs they will have to fulfill. This function is fulfilled through the following activities:

9.8.8.1 While Operations is dealing with the patient load as it arrives, Planning should be accessing information resources (for example, databases, field response assessments, consultation with subject matter experts, and so forth) to identify the expected number of patients based on that information.

9.8.8.2 When the event involves unusual circumstances, Planning should be conducting literature reviews and tests to develop the best management techniques for the peculiar circumstances of the event.

9.8.8.3 As part of the effort of developing the information on management techniques and patient loads, Planning should also be evaluating the quality of the data being used to produce their predictions. This quality assessment function may range from consideration of the agenda by the sources of information that could lead to bias in their recommendations to processing information from multiple sources to critical reviews of underlying studies to technical limitations of the equipment and staff providing the information.

9.8.8.4 As patients are moving through the hospital setting, Planning should be monitoring data on the status of these patients to estimate the outcome of the treatment received during the incident to modify the treatment of future patients.

9.8.8.5 As necessary, contact with subject matter experts (for example, poison control centers, specialists, and so forth) should be established and maintained throughout the event.

9.8.8.6 Planning should anticipate the impact of human behavior on hospital staff. Based on behavior in real events to date, there should be consideration of hospital staff leaving the facility or not returning to the facility due to concerns about their own safety, or that of their families or homes, during an emergency. Hospitals should proactively develop communication and coordination channels through the community planning process to heighten awareness of the community's level of preparedness, provide direct support and information to staff as possible during the event, set up breaks or furloughs for staff during prolonged events, and have a back-up staffing strategy to deal with the risk of staff attrition during an emergency.

9.8.8.7 As the hospital response progresses, Planning, in conjunction with logistics, should be anticipating skill sets and other resources that will be necessary to relieve or replace existing staff resources and identifying potential sources for those assets. This function of planning would result in a recommendation to the hospital command to activate mutual aid agreements or request state and federal assets to relieve or support operations.

9.8.9 *Logistics*—The Logistics section is in charge of securing resources and supplies, ensuring facility integrity, and maintaining infrastructure, utilities, communications, nutrition, and transportation. Incident Command shall establish logistical capability and procedures to locate, acquire, store, distribute, maintain, test, and account for services, personnel, resources, materials, and facilities procured or donated to support the program by:

9.8.9.1 Establishing supply resource area and relationships with necessary suppliers;

9.8.9.2 Conducting inventory of equipment and supplies on the scene and anticipating requirements of additional equipment and supplies;

9.8.9.3 Coordinating requests from the incident commander for equipment, supplies, pharmaceuticals, and resources that must be obtained from outside the hospital and then finding and procuring those assets;

9.8.9.4 Directing additional equipment and supplies as they arrive at the hospital and notifying incident command, if appropriate, as to their assignment;

9.8.9.5 Maintaining inventory of arriving equipment and supplies;

9.8.9.6 Making provisions for service, repair, and fuel for all apparatus and equipment;

9.8.9.7 Providing photo identification of necessary personal, hospital, mutual aid, emergency response, or volunteers;

9.8.9.8 Developing methods for facility control, crowd management, and way-finding;

9.8.9.9 Posting signage to identify key locations for staff and visitors and traffic control; and

9.8.9.10 Developing processes for voluntary donations, solicited and unsolicited, and the management thereof.

9.8.10 *Finance/Administration Section*—This section will develop financial and administrative procedures to support the program before, during, and after an incident. It is fully defined in 10.1.2.

9.8.11 Subsections are identified in many hospital ICS plans and are activated as needed in managing an incident: facilities, damage assessment, sanitations systems, communications, transportation, materials supply, and nutritional supply.

9.9 *Essential Elements of the EOP:*

9.9.1 *Patient Care:*

9.9.1.1 On a day-to-day basis, the hospital care system provides lifesaving care. In shifting to Major Incident Management (MIM) mode, it is necessary to use surge capacity to provide emergency care and appropriate definitive management of patients. Bed counts alone do not determine surge capacity or the ability to care for patients.

9.9.1.2 *Patient Triage in a Multiple Casualty Incident*—When the EOP is activated, the goal is to provide the most effective care for the greatest number of persons and include existing patients, incident patients, and those patients who need hospital care for routine community emergencies. The surge capacity assessment must be reported to the authority that is managing the flow of transportation of ill or injured patients to hospitals. The communication of this patient care capacity inventory should be reported in categories:

(1) Red Category (ED Acuity Level I)—The patients requiring medical care in the next hour. These victims have serious life-threatening injuries but have a high probability of survival if they receive immediate care.

(2) Yellow Category (ED Acuity Level II)—Those patients requiring care in the next 1 to 12 h to prevent long-term complications. Those victims who are seriously injured and whose lives are not at risk. Triage status of these patients may change to Red patients based on medical resources at any time. This category includes a group of special needs patients in a situation that would only take place in a major multiple casualty incident. These are the patients who are not obviously dead as per local medical control, or victims with severe injuries with low probability of survival, even with immediate care. Based on limited resources, some patients who are expected to die may not receive immediate care. As this is a difficult field decision, it is expected that these victims may be transported and provided hospital treatment.

(3) Green Category (ED Acuity Level III and IV)—Those patients with minor injuries or illnesses that are non-life threatening, but need medical attention. These victims may be injured but do not require immediate medical attention and include those apparently not physically injured.

(4) Black—Those victims who have expired, or are expectant to die within a short period of time, and require hospital fatality management to occur. Palliative care resources will be available.

(5) Special Resource Patients—Those patients with special medical needs that are provided by the hospital best equipped to deliver that care. Depending on the incident, this may mean: trauma patients at a trauma center, burn patients at a burn center, pediatric patients at a children's hospital, mental health patients to a mental health facility, or obstetrical patients at a center prepared to deliver infants with more intense medical needs.

9.9.1.3 The plan should provide a process by which modification or discontinuation of nonessential patient services will take place and that will be communicated effectively to all hospital staff, physicians, patients, and their families. In many circumstances and in many hospitals, an event could force the hospital to modify admission and transfer plans, cancel elective surgeries, postpone elective admissions, and discharge patients early. Emergency transfer plans need to consider the safe management of patients, personal property, and medical records, to provide a continuity of quality care.

9.9.2 *Transportation*—The transportation function oversees the transport management of patients requiring movement out of the facility, if that is needed. Transportation will be needed if the hospital is compromised and patients must be removed for medical care. It will be needed if the incident is resulting in overwhelming numbers of victims and a large number of existing patients must be removed to allow care for the victims. Transportation will:

9.9.2.1 Establish patient staging and loading areas;

9.9.2.2 Establish or designate, or both, a medical communications function;

9.9.2.3 Arrange appropriate vehicles and methods of transport;

9.9.2.4 Maintain a log of vehicle and patient destination;

9.9.2.5 Coordinate patient allocation and transportation with treatment and staging;

9.9.2.6 Determine hospital and specialty referral center capabilities, and, through communications, update their status regularly;

9.9.2.7 Assign patients to be transported to each facility in accordance with predetermined plans and policies or consultations with medical facilities or both;

9.9.2.8 Communicate with receiving facility regarding patient condition and status;

9.9.2.9 Provide progress reports; and

9.9.2.10 Report when the last patient has been transported.

9.9.3 *Legal Issues*—Ensure that the Plan is in compliance with local, state, and federal laws and regulations. Identify and attempt to resolve potential regulatory conflicts before the event with appropriate agencies (HIPAA and EMTALA in particular are regulatory standards that may be problematic in major multiple casualty incidents).

9.9.4 *Psychosocial Services*—Arrangements for psychosocial services should be an integral part of the planning process. Plans should incorporate mechanisms for soliciting involvement from professional mental health clinicians who are experienced with hospital and health care systems. An assigned clinical coordinator should actively participate in a psychosocial team response planning effort. This team should be organized, in place, and available as part of any community response effort. Further, this team should participate in all phases of the response, including planning and evaluation. Hospitals should develop a mental health support function to provide support and interventions for staff, patients, families,

other emergency providers, and visitors. Hospitals may use external resources and internal staff including psychology and psychiatry, social service workers, pastoral care, and employee assistance resources.

9.9.4.1 Hospitals should coordinate with organizations (for example, the Red Cross) providing care for those not in need of medical services. Appropriate public information releases by credible officials may substantially reduce the number of individuals who have concerns about exposure or symptoms. At the hospital level, an appropriate designated health care provider should provide advice to incoming individuals or those requesting guidance over the phone. That is often adequate to relieve the concerns of exposures or minor illnesses.

9.9.4.2 Hospitals should consider psychological support interventions for patients, visitors, family, and staff in all disasters. The amount of support will vary by the nature and extent of each incident. Early interventions will likely lessen intermediate and long-term problems.

9.9.5 *Fatality Management*—The function of fatality management is to streamline communications with families of the deceased and manage the interaction with agencies responsible for the investigations and management of fatalities from the incident. The communication plan should define the appropriate interaction with families and significant others when they seek the whereabouts of the victim: what are they told, what are they not told, who tells them, and where are they directed for follow-up information or guidance. This will involve coordination with other community agencies (the American Red Cross has a key role in many communities. Fatality management will involve coordinating with law enforcement and assisting the medical examiner's office as necessary and is carried out in the Morgue Unit within Operations by:

9.9.5.1 Keeping identity of deceased victims confidential;

9.9.5.2 Maintaining records, including victims' identities (if available), and personal effects;

9.9.5.3 Coordinating mass fatality management;

9.9.5.4 Protecting all parties in the event of fatalities from an actual or potential exposure incident (biologic, chemical, or radiation);

9.9.5.5 Providing for an appropriate temporary morgue facility; and

9.9.5.6 Providing appropriate security to the morgue area.

9.9.6 *Hospital-Based Response Teams*—Hospital-based response teams may be asked to respond to an incident in a short period of time for specialized and complex field care. The team composition would include individuals trained in utilization of PPE, response worker safety, triage, field medicine, and ICS. These teams will usually maintain an operational mode for a very short period of time. In many communities, the hospital team would only be asked to perform complex special procedures, such as the field amputation of a trapped patient in extremis.

9.9.7 *Decontamination:*

9.9.7.1 All hospitals shall be capable of providing decontamination to individual(s) with potential or actual hazardous agents in or on their body. The process of decontamination may be accomplished with or without the use of water or cleansing

agents. Each hospital must have a process to differentiate and manage individuals using both these decontamination methods in appropriate circumstances ("wet" and "dry" decontamination).

9.9.7.2 It is essential that facilities have the capability to decontaminate more than one patient at a time and be able to decontaminate both ambulatory and stretcher bound patients. The decontamination process should be integrated with regional planning.

9.9.7.3 A common planning guide is that a community should be able to provide decontamination to 500 persons per million population in 2 h. For an isolated community hospital serving a population of 100 000 persons, that hospital should be able to decontaminate 50 persons in 2 h, or 25 per hour, or about one every 2½ min. This should allow hospitals to plan for one set of equipment that would serve ambulatory patients (a showering setup) and one set of equipment that would decontaminate non-ambulatory patients (two at a time, washed about 5 min a piece) but could be adapted if all persons are ambulatory.

9.9.7.4 The system designed by the hospital will address these essential elements:

(1) Adequate outdoor or indoor systems with consideration of typical ambient climate or heating systems to support colder climates. There must be adequate lighting and systems to communicate with staff and patients, both indoors and outdoors.

(2) Provision for separate entrance from typical ambulatory entrance, if the decontamination area is indoors. Some hospitals must combine the decontamination area with the EMS entrance. This is not desirable in the implementation of new systems as hospitals do redesigns.

(3) Provision for shower heads supplied with warm clean water, sufficient in number to manage the planning volumes.

(4) Gender and privacy concerns.

(5) Capability to separate, isolate, and secure personal property for later decontamination.

(6) Provision of supplies (for example, containers and name tags) and procedures for separately securing personal clothing and valuables and a process that allows valuables to be matched back with the patient.

(7) Provision of clothing for persons to wear following the decontamination process.

9.9.8 *Personnel and Personal Protective Equipment (PPE) Related to Patient Decontamination*—In this document, PPE is defined by NFPA 1994.

9.9.8.1 The level of PPE will be established based on the HVA and regulatory guidelines and the level of decontamination that is being designed. The HVA will set essential standards for hospitals that need to consider their facilities "worst case" scenario and plan accordingly. For those that identify high-risk scenarios that are predictable for the hospital, higher levels of PPE and more stringent decontamination processes are essential. The hospital that functions close to an organophosphate production plant, with a history of employee contamination incidents, would design higher level decontamination processes.

9.9.8.2 To fulfill the requirements for all hospitals to provide essential decontamination services, there must be the capability to have four hospital employees available 24 h a day to use Level C protection to decontaminate patients who are grossly contaminated. It is possible to use different types of staff in meeting this baseline level (environmental, plant engineering, nursing, techs, and physicians). There is an advantage in having enough suits and respiratory protection to allow for three "shifts" with backup teams, keeping in mind that the teams will have limited work time in the decontamination environment.

9.9.8.3 It is an essential element that facilities have sufficient Level C protection for perimeter entrances, and for decontamination of presenting patients, unless the HVA indicates a higher level of protection is needed. Level C equipment provides liquid splash protection and uses air-purifying respirators. The PPE should offer a chemical-resistant suit with hood, full face shield, waterproof, chemical-resistant boots, and chemical-resistant gloves. The design should provide enough suits for decontamination to be continued until victims are all managed. In mass decontamination situations, it may be possible to use community stocks of decontamination gear or request mutual aid from nearby hospitals or fire departments. Guidance in this area can be obtained from the OSHA First Receivers document.[6]

9.9.8.4 For higher levels of protection when the HVA indicates the need, the hospital can have sufficient Level B PPE available. PPE, including Level B equipment, would include respiratory protection such as an atmosphere supplying respirator (ASR), a supplied air respirator (SAR), or a self-contained breathing apparatus (SCBA), chemical-resistant suit with loose-fitting hood, face shielding, waterproof-chemical resistant boots, and chemical-resistant gloves.

9.9.8.5 The design of the decontamination area may drive the appropriate purchase and training of airway protection equipment. Donning of PPE generates higher levels of heat stress and mechanical restriction on rescuers, with subsequent increased risk of injury.

9.9.8.6 Selection of respiratory protection for hospital personnel:

(1) This will relate to proximity to and types of community hazards identified in the HVA.

(2) Risk of terrorist attack and the risk of institution being targeted.

(3) Role of the health care worker (response to HAZMAT event versus decon services only).

(4) Location of decontamination facility. Facilities that have an indoor decontamination room may wish to consider supplied-air hooded respirators instead of PAPRs as a continual supply of clean air may be desirable. Ceiling mounting of the hoses on swing bars decreases trip hazards.

(5) Location of decontamination surge capability.

(6) Availability of personnel (number and training level).

(7) The hospital plan will include standards for training, skills maintenance, drills/exercises, and appropriate fitting of personnel.

(8) The PPE must be maintained and inspected and meet regulatory requirements for safe management.

(9) PPE must be available for immediate use for a variety of presenting hazards.

(10) Persons who manage the intake of emergency patients must have rapid access to this equipment.

9.9.8.7 When possible, hospitals should partner regionally to adopt standard equipment, training, and credentialing to enhance the ability of providers to move between institutions (physician and nursing staff). Those facilities choosing PAPRs may wish to purchase enough respiratory protection equipment to manage prolonged decontamination operations during a biologic event.

9.9.8.8 Planning should also include the location of "surge capability" decontamination. The hospital will have in place mechanisms for mass decontamination, in applicable weather conditions. Though many facilities have a decontamination room, this may need to be supplemented with outdoor tents, trailers, and other means during mass decontamination. PPE should be flexible enough to allow providers to work as seamlessly as possible between these zones.

9.9.8.9 The number of suits and respirators on hand will vary depending upon the size of the decontamination teams. The number of suits and respirators will also vary in proportion to the number of personnel assigned to patient entry corridors and perimeter security.

9.9.8.10 The hospital will train staff having direct contact with contaminated patients to the Hazmat Operations Level, with emphasis on the use of PPE and decontamination procedures. Drills and exercises should be conducted to validate the decontamination plans, capabilities, and personnel training. Minimum frequency of drills and training of decontamination personnel will be addressed in the hospital HVA.

9.9.8.11 The decontamination process shall be able to be implemented in the event of concurrent illness, injury, burn, or trauma. The design will consider location and type of decontamination for critical patients with associated burn, trauma, or illness.

9.9.9 *Essentials in the Design of the Decontamination Process*—The design will:

9.9.9.1 Consider predictable ambient temperatures and conditions for decontamination of at-risk individuals, to include children, elderly, and physically and mentally disabled individuals;

9.9.9.2 Consider methods to prevent secondary contamination and environmental damage from decontamination solutions;

9.9.9.3 Identify a decision-maker to designate isolation and quarantine of patients and the decontamination area, if necessary;

9.9.9.4 Include the contingency for evacuation of the hospital, or portions thereof, to support the decontamination operation;

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[6] Occupational Safety and Health Administration (OSHA), *OSHA Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances*, 2000, Online, Available: www.osha.gov.

9.9.9.5 Identify a mechanism to provide access to equipment to detect biological, chemical, or radiologic hazards on the patients or remove during decontamination;

9.9.9.6 Identify a mechanism to obtain or provide emergency pharmaceuticals (for example, chemical antidotes) to administer during or after decontamination. The hospital will maintain an essential level of antidotes or pharmaceuticals or both to treat its personnel involved in a decontamination operation. The hospital will have a process to provide that treatment to involved hospital staff, and if necessary, other exposed persons (hospital staff member families, EMS personnel, and other emergency providers);

9.9.9.7 For certain hospitals with risks identified in the HVA, identify a mechanism to obtain or provide specialized diagnostic equipment and services (acetylcholinesterase testing) to be used on appropriate patients during or after decontamination; and

9.9.9.8 Hospital-specific checklists will improve the decontamination process, communications, recordkeeping, and compliance.

9.10 *Hospital Evacuation:*

9.10.1 Evacuation of a hospital is one special element of Major Incident Management Planning. Evacuation can be partial or total in response to an internal or external incident. Large hospital campuses may have horizontal, vertical, and partial or complete building evacuations.

9.10.2 To the extent possible, the destination of the evacuated patients should be pre-identified and pre-negotiated and described in the plan. This may be via a memorandum of understanding with regional partners outside of the area of the emergency or another negotiated arrangement.

9.10.3 The evacuation portion of the Plan will include essential elements such as:

9.10.3.1 Identification of conditions warranting evacuation, and authority of persons to initiate an evacuation.

9.10.3.2 Description of movement of patients within the institution or on the campus. This would include horizontal or vertical movement in response to safety considerations.

9.10.3.3 Definition of the triage process that would release certain patients from the hospital through a modified discharge process and would prioritize the movement of special needs patients to similar care units.

9.10.3.4 Description of movement of equipment, supplies, and medical records to ensure continuity of quality health care.

9.10.3.5 Execution of staff movement plans to accompany patients.

9.10.3.6 Transportation and patient tracking, internal and external to the hospital.

9.10.3.7 Resolution of emergency condition and return to patient care operations.

9.11 *Emergency Communication Systems*—Hospital communications become particularly important during a major incident to ensure that the hospital's communications system can meet the requirements and not itself become disabled by the incident.

9.11.1 *Essentials of Hospital Emergency Communication Systems:*

9.11.1.1 An emergency notification system of key hospital personnel must be in place. This may include automated systems and identification of staff critical to the operation of the hospital.

9.11.1.2 Means should be provided to allow direct communications as needed among hospitals, EMS units, public health providers, and other entities within the region that provide basic community services.

9.11.1.3 Available techniques include standard telephones, cell phones, digital handheld devices, the internet or intranet, fax machines, use of radios (common disaster channels, multi-agency, multichannel radios, or crosspatch of channels through dispatch center or a mobile dispatch center), amateur radio operators, satellite phones, runners, public address systems, and face-to-face communication. Hospital communications become particularly important during a major incident to ensure that the hospital's communications system can meet the requirements and not itself become disabled by the incident.

9.11.1.4 The equipment should be provided with independent standby power sources to avoid dependence on commercial power.

9.11.1.5 Procedures must be in-place that identify the who, what, when, and how of the communication process and information to be transmitted both internally and externally. These include:

(1) Interfacing with local, state, and federal agencies;

(2) Communicating is a timely manner with mutual aid providers that follows the accepted communication process and does not bypass the local or regional emergency response system; and

(3) Communicating with EMS personnel to update incident response and response requirements.

9.11.1.6 The hospital should strongly consider redundancy and backup communication which can include satellite phones, radio systems, and HAM radio systems to name a few.

9.11.1.7 Training and evaluation, through drills and exercises, must be conducted around the emergency communication process that includes internal hospital departments and external agencies.

9.12 *Patient Medical Records:*

9.12.1 Hospitals have the need for a patient medical care documentation system that is sustainable even with loss of infrastructure. Hospitals will have in place a one-page patient medical care recordkeeping document not dependent on electronic devices for production. This document shall provide a minimum set of victim data in concordance with the National Disaster Medical System or other Homeland Security authority.

9.12.2 Hospitals should work with local and regional EMS providers to develop a system for documenting pre-hospital care for those patients who arrive via that method.

9.12.3 Field medical records or pre-hospital MCI triage tags should be integrated with hospital medical treatment records to include times of evaluation, treatment provided, and agency providing treatment or transportation.

9.12.4 The medical record system will provide for the collection of treatment records for incident patients and reporting as necessary.

9.13 *Public Information*—The public information function disseminates factual and timely reports to the community public information center and the news media. It is an important element of NIMS. The NIMS system uses Joint Information Center operations in large incidents and where critical information release is necessary for public health.

9.13.1 A hospital PIO must be designated. The individual performing this function will coordinate the hospital interaction with the media.

9.13.1.1 Contact the incident commander for a briefing upon arrival.

9.13.1.2 Contact the jurisdictional agency in charge to coordinate public information activities.

9.13.1.3 Establish a media area in an appropriate location.

9.13.1.4 Liaison with the press to identify their needs and assist in accessing special resources.

9.13.1.5 Decide what information should be released.

9.13.1.6 Ensure HIPAA compliance such as holding the release of patient names before notification of kin.

9.13.1.7 Coordinate information release with other hospitals and responding agencies. The need for prior written agreements with appropriate responding agencies such as the American Red Cross will greatly facilitate coordination of name release at the time of a major incident.

9.13.2 The public information function reports to the incident commander.

9.14 *Integration of Public Health Surge Care:*

9.14.1 An appropriate individual, which may be a physician or other health care provider, will coordinate hospital interface with other community health care resources. The closest element is the hospital's medical staff and then includes other physicians in the community, clinics, public health providers, allied health providers, and even veterinary and other providers in certain circumstances.

9.14.2 The hospital will be integrated in regional health task forces essential to manage current health threats.

9.14.3 In major incidents that involve widespread community exposures, it is particularly important to integrate "Patient Discharge Instructions" between treating facilities and establish appropriate follow-up for testing and questions.

10. Recovery

10.1 The recovery plan shall be developed using strategies based on the short- and long-term priorities, processes, vital resources, and acceptable time frames for restoration of services, facilities, programs, and infrastructure. Recovery planning normally includes bringing infrastructure and individuals back to pre-disaster conditions, including implementation of mitigation measures, to facilitate short- and long-term recovery. The recovery function includes the elements of planning, finance and administration, documentation, and business continuity.

10.1.1 *Planning*—Under the ICS, the Planning section is responsible for future operations of the hospital. If Operations is dealing with treatment and patient management, and Logistics is keeping the direct care providers properly equipped and stations staffed, then Planning is the section charged with responsibility for what comes next. In a hospital setting, this may include treatment protocols beyond supportive treatment, researching potential hazards, identifying and accessing subject matter experts, developing predictions of patient loads over time, and developing the technical aspects of the public information message.

10.1.2 *Finance and Administration*—The Financial/Administrative section is for financial and expense/payment accountability and coordinating reports and records of the response.

10.1.2.1 The Financial/Administrative section shall develop financial and administrative procedures to support the program before, during, and after an emergency or a disaster.

10.1.2.2 The Financial/Administrative section should be actively involved with identifying, prioritizing, and approving purchase of equipment, services, supplies, pharmaceuticals, and other assets. This would include the identification of costs for equipment and personnel used from mutual aid providers and the methods to reimburse the mutual aid provider for appropriate costs.

10.1.2.3 This section should address consideration of the impact of services provided to nontraditional patients (for example, boarding displaced nursing home residents in an acute care hospital or provision of specialized trauma surgeries at a community-based ambulatory surgery center) for which routine reimbursement rules would not apply.

10.1.2.4 Procedures shall be established to ensure that fiscal decisions can be expedited and shall be in accordance with established authority levels and accounting principles. The procedures shall include, but not be limited to, the following:

(1) Accounting systems to track and document capital and operating costs;

(2) Program procurement procedures;

(3) Payroll—This function is critically important in certain incidents in which hospital staff have incurred significant losses as a result of the incident and local infrastructure loss precludes typical methods of payroll distribution; and

(4) Procedures that will allow an entity to expedite financial decision-making and ensure that proper accounting occurs.

10.1.3 *Business Continuity Program*—An ongoing process supported by senior leadership 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 clinical, operating, and support services. Business continuity planning incorporates both the initial activities to respond to a disaster/emergency situation and the restoration of the business and clinical support functions to pre-incident levels. A business continuity plan shall identify the critical and time-sensitive applications, vital records, processes, and functions that shall be maintained, as well as the personnel and procedures necessary to do so, while the damaged facility, equipment, or departments are being recovered.

10.1.3.1 Identify vital personnel, systems, operations, records, and equipment.

10.1.3.2 Succession planning will ensure that the leadership will continue to function effectively under disaster/emergency conditions. When practical, there is a designation of at least three successors for each position. Provisions have been made to deal with vacancies and other contingencies such as absence or inability to act.

10.1.4 *Documentation and Evaluation of a Major Incident*—The evaluation of an effective hospital response to an incident must encompass both objective and subjective assessments of the response and become part of the hospital's future preparedness planning.

10.1.4.1 The minimum dataset for documentation and evaluation of a major incident should include, but not be limited to, a collection of reproducible data that can be verified and validated by subsequent investigators. This would include chronology/timeline of events, communication logs, and review of appropriate medical records in a system that safeguards privacy of the medical information.

10.1.4.2 Multidisciplinary teams are suggested as systems evaluators for timely and efficient completion of the evaluation.

11. Training

11.1 The entity shall assess training needs and develop and implement training/educational curricula to support the program. The training and education curricula shall comply with all applicable regulatory requirements and be consistent with training conducted on a regional basis.

11.2 The objective of the training shall be to create consistency and awareness and enhance the knowledge and skills required to implement, maintain, and execute management plans.

11.3 MI response will differ significantly from single-patient response. The ability of the hospitals and their personnel to respond effectively can mean the difference between life and death and health and disability to victims and patients, staff, their families, and the community.

11.4 Hospital staff should have essential knowledge as to incident types, communication systems, special resources (such as HAZMAT teams, poison control centers, government assets, and so forth), facility management, patient identification, triage, and patient care procedures.

11.5 Frequency and scope of training shall be sufficient to maintain knowledge levels in the various types of hospital personnel. This can be validated through a competency-based approach that allows healthcare workers to "test out" of a particular program or be evaluated during a scheduled drill/exercise.

11.6 It is essential that healthcare workers at all levels of the hospital be trained to meet their responsibilities in the course of an incident impacting the hospital. Programs should be developed at the introductory (awareness), intermediate, and advanced levels based on needs identified in the HVA.

11.6.1 While the HVA can identify likely types and locations of hazards in the community, a MI may occur at any time and in any form. Awareness level training should focus on the rapid and effective "All Hazards" response to any event.

11.6.2 All staff must be trained to respond at a level appropriate to the day-to-day function of that individual. The HVA must be able to identify those healthcare workers by specialty and match them with the types and levels of education programs to be offered.

11.6.3 Address training for use of specialized PPE.

11.6.4 Minimum hours of hospital personnel training on emergency operations preparedness may be established by a regulatory or certifying body, but hospital employees should train 2 to 10 h per year per employee, based on that employee's function and the HVA for his/her department. Training adequacy should also be measured by achievement of educational objectives and demonstration of competency in the content. In some cases, actual response experience can be allowed to meet this requirement.

11.7 The MI training curriculum should address essential topics for all staff:

11.7.1 Introduction/overview of NIMS response planning;

11.7.2 Roles, responsibilities, and resources of various responders, services, and levels of providers;

11.7.3 Triage, treatment, and disposition principles that apply in various types of incidents identified in the HVA;

11.7.4 *The Hospital's ICS and Emergency Response Plan*—All hospital personnel should receive awareness training regarding this system. As the level of responsibility increases, the scope of ICS training will increase in proportion to potential roles and responsibilities;

11.7.5 Emergency communication systems, including emergency notification and ongoing communications;

11.7.6 Principles of intradepartmental, interdepartmental, and interagency coordination and communication;

11.7.7 Incident-specific guidelines, such as exposure incidents, terrorist incidents, natural, and environmental events;

11.7.8 Psychosocial impacts on healthcare workers, patients, victims, families, and the community;

11.7.9 Evaluation and application of lessons learned from drills, exercises, and actual incident response;

11.7.10 Selection and use of personal protective equipment as appropriate;

11.7.11 Accessing information resources and applying the information to the situation at hand;

11.7.12 Response to prolonged incidents;

11.7.13 Documentation and reporting responsibilities; and

11.7.14 Sustainment of training, through continuing education or other methods, to lessen the diminution of necessary skills. Training records shall be maintained.

12. Training Drills and Exercises

12.1 *Purpose*—The purpose of a drill or exercise is to test the effectiveness of the entire Plan or a portion of it, identify areas of the Plan that have not been addressed, and provide experience in the use of the Plan. In addition, drills and exercises can be used to identify training that is required or has been conducted, evaluate personnel performance, meet requirements for community preparedness, and maintain continuous learning on all-hazards preparedness. The hospital Plan will include long-range elements to design, execute, evaluate, and

place learning lessons into future events. The hospital Plan will encompass drill and exercise activity that takes place at every level of department within the facility. Drills and exercises should stress the emergency response system to identify organizational strengths and capability shortfalls.

12.2 The entity shall evaluate program plans, procedures, and capabilities through periodic reviews, testing, post-incident reports, lessons learned, performance evaluations, and exercises.

12.3 Exercises shall be designed to test individual essential elements, interrelated elements, or the entire Plan(s).

12.4 *Planning and Scope of Drills and Exercises:*

12.4.1 Determine which hospital department and outside agencies are involved and to what extent,

12.4.2 Determine a realistic scenario from the HVA and determine the type of exercise to be conducted, and

12.4.3 Explore contingencies for multiple simultaneous adverse events, severe weather situations appropriate to the hospital's climate, infrastructure or equipment failure, and prolonged events.

12.5 The hospital shall establish an exercise design team and, as necessary, an exercise control team. In some hospitals, this may be one group. The team will be designed with personnel from various hospital departments. The team is responsible to the hospital emergency management committee.

12.5.1 The exercise design team develops both short- and long-term goals in collaboration with the key departments involved.

12.5.2 A timetable is established for the ongoing training of hospital personnel and critical elements of the overall hospital EMP.

12.5.3 A reporting mechanism is established that oversees the drill and exercise plans of all hospital departments.

12.5.4 The exercise design team will establish evaluation criteria in cooperation with the exercise control team to test the EMP and provide timely review of evaluation data and outcome of the drill with participating hospital departments and agencies.

12.5.5 An exercise control team must be identified that includes controllers/facilitators, simulators, and evaluators and will document the drill or exercise, its lessons learned, and follow-up items. It is usually beneficial for members of the design team to be part of the control team.

12.5.6 The exercise design team will establish evaluation criteria in cooperation with the exercise control team to test the EMP and provide timely review of evaluation data and outcome of the drill with participating hospital departments and agencies.

12.6 Exercises should include, but not be limited to, orientation, tabletops, drills, simulations, functional, and full-scale operational exercises. Planners should consider the guidance in NRT-2 Developing a Hazardous Materials Exercise Program.[7]

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[7] U.S. National Response Team, *NRT-2 Developing a Hazardous Materials Exercise Program: A Handbook for State and Local Officials*, Online, Available: www.nrt.org.

12.7 Safety is a primary concern in a drill or exercise. As part of the Incident Management System, a safety officer on the control team will specifically manage those portions of the drill or exercise to avoid compromising staff or actual patient care functions.

12.8 A corrective action/mitigation program is a process that follows an actual occurrence or exercise to identify program shortfalls and necessary corrective actions to address those shortfalls. Typically, those deficiencies fall within one or more of these areas:

12.8.1 EMP, standard operating procedures (SOP), or annex revisions;

12.8.2 Training or drill/exercise deficiencies; and

12.8.3 Equipment additions or modifications and facilities.

12.9 The corrective action program provides the techniques to manage the capabilities improvement process.

12.10 During the evaluation, process deficiencies may be found that require improvement.

12.11 Develop options for appropriate corrective action.

12.12 Make recommendations for a preferred option.

12.13 Develop an implementation plan that should include timelines, individual responsibility, next steps, expected outcomes, and any training required along with any associated costs.

12.14 Ensure that during the next exercise, the corrective action be evaluated to determine if the corrective actions have been successful.

12.15 There are eight components in the corrective action program as follows:

12.15.1 Develop a problem statement that states the problem and identifies its impact.

12.15.2 Review the past history of corrective action issues from previous evaluations and identify possible solutions to the problem.

12.15.3 Select a corrective action strategy and prioritize the actions to be taken.

12.15.4 Provide authority and resources to the individual assigned to implementation so that the designated change can be accomplished.

12.15.5 Identify the resources required to implement the strategy.

12.15.6 Check on the progress of completing the corrective action.

12.15.7 Forward problems that need to be resolved by higher authorities to the level of authority that can resolve the problem.

12.15.8 Test the solution through exercising once the problem is solved.

13. Keywords

13.1 emergency management program; hospitals; major incident; preparedness; response

APPENDIX

(Nonmandatory Information)

X1. HAZARD VULNERABILITY ANALYSIS GUIDE

X1.1 *Hazard Analysis and Needs Assessment*:

X1.1.1 Fundamental to the planning process is an understanding of the problems that should be anticipated in a given geographic area. A hazard analysis is a preliminary survey of real or potential hazards in a specific geographic area. The hazard analysis performed by a hospital must take into consideration the hazard assessment findings of the community at large. This will help to identify facility and community capabilities and shortfalls.

X1.1.2 A hazard analysis appraises the hospital or health care organization of the events that are likely to occur in the community.

X1.1.3 It minimizes efforts to plan for unlikely events.

X1.1.4 It provides an incentive for the hospital and health care organization planning process.

X1.1.5 It may indicate preventive measures.

X1.1.6 It creates an awareness of previously unrecognized hazards.

X1.1.7 When the hazard analysis is complete, the hospital or health care organization should be able to make the following decisions:

X1.1.7.1 The type of additional emergency planning that is desired,

X1.1.7.2 What aspects of response preparedness should be prioritized,

X1.1.7.3 What resources will be needed to address priority requirements, and

X1.1.7.4 The type and quantity of mutual aid and support services that might be required in addition to available jurisdictional services.

X1.2 *Components*—A hazard vulnerability assessment is comprised of three basic components:

X1.2.1 Consideration of the potential for specific incidents,

X1.2.2 Evaluation of the potential harm resulting from the incident, and

X1.2.3 Evaluation of the resources required to respond to the incident.

X1.3 *Approach*—The following are suggested approaches to completing a needs assessment:

X1.3.1 Form a team to identify the potential hazards, risks, and impact relating to hospital and health care organization.

X1.3.2 Consult the local or state emergency management agency or local or state public safety officials, or all, for assessment information.

X1.3.3 Perform a hazard vulnerability analysis that focuses on patient care areas; evaluate them for their potential hazards, risks, and impact.

X1.3.4 Evaluate the regional area resources. Join or become active in local planning groups such as Local Emergency Planning Committees (LEPCs), Area Planning Committees, Hazardous Materials Advisory Councils, and so forth.

X1.3.5 Form or join and maintain active in emergency medicine groups in the area such as local medical societies, area hospital organizations, and the community planning groups mentioned above.

X1.3.6 Review professional literature for evidence-based hazard information, including response-based outcome analysis.

X1.4 *Resources Assessment–Personnel and Equipment*:

X1.4.1 Consider the personnel required for performing hospital functions and the staff hours required for appropriate preparedness training, including PPE instruction and skill maintenance. Inventory equipment for the job and evaluate its ability to perform the task. This inventory should include worker personal protection equipment designated by job description and should be appropriate to the hazard. Protective equipment not appropriate to the hazard may increase the risk to the worker. Appropriateness is determined by the expected properties of the hazard, the known properties of the protective equipment, the anticipated situation at the time of use, and the physiological factors relating to the use of the equipment by individuals. Prepare a written description of all-hazard potential incidents and the ability of the hospital and health care organization to meet the resource needs appropriate to these incidents.

X1.4.2 The entity shall identify hazards, the likelihood of their occurrence, and vulnerability of people, property, the environment, and the entity itself to those hazards.

X1.4.3 Hazards to be considered at a minimum shall include, but shall not be limited to, the following:

X1.4.3.1 Natural hazards (geological, meteorological, and biological), and

X1.4.3.2 Events caused by human beings (accidental and intentional).

X1.4.4 The entity shall conduct an impact analysis to determine the potential for detrimental impacts of the hazards on items including but not limited to the following:

X1.4.4.1 Health and safety of persons in the affected area at the time of the incident (injury and death),

X1.4.4.2 Health and safety of personnel responding to the incident,

X1.4.4.3 Continuity of operations,

X1.4.4.4 Property, facilities, and infrastructure,

X1.4.4.5 Delivery of services,

X1.4.4.6 The environment,

X1.4.4.7 Economic and financial condition,

X1.4.4.8 Regulatory and contractual obligations, and

X1.4.4.9 Reputation of the entity.

BIBLIOGRAPHY

(1) Barbera, J. and Macintyre, A., *Medical and Health Incident Management System*, George Washington University, Washington, DC, 2002.

(2) *Best Practices and Guidelines for Mass Personnel Decontamination*, Technical Services Working Group, June 2003.

(3) *Bioterrorism Emergency Planning and Preparedness Questionnaire for Healthcare Facilities*, Version 1.0, Agency for Healthcare Research and Quality, March 10, 2002 .

(4) Burgess, J. L., Blackmon, G., Brodkin, C. A., and Robertson, W. O., "Hospital preparedness for hazardous materials incidents and treatment of contaminated patients," *West J Med*, 167, 1997, pp. 387-391.

(5) Burgess, J. L., "Hospital evacuations due to hazardous materials incidents," *Am J Emerg Med*, Vol 17, No. 1, 1999, pp. 50-52.

(6) Burgess, J. L., Kirk, M. A., Borron, S. W., and Cisek, J., "Emergency department hazardous materials protocol for contaminated patients," *Ann Emerg Med*, Vol 34, 1999, pp. 205-212.

(7) Burges, J. L., "Risk factors for adverse health events following hazardous materials incidents," *J Occ Env Med*, Vol 43, No. 6, 2001, pp. 558-566.

(8) Centers for Disease Control and Prevention, "Public health consequences among first responders to emergency events associated with illicit methamphetamine laboratories-selected states, 1996-1999," *MMWR*, Vol 49, 2000, pp. 1021-1024.

(9) *Chemicals in Your Community*, U.S. Environmental Protection Agency, Office of Solid Waste and Environmental Response 5104, EPA 550-K-99-001, December 1999.

(10) Cox, R. D., "Decontamination and Management of Hazardous Materials Exposure Victims in the Emergency Department," *Ann Emerg Med*, Vol 23, April 1994, pp. 761-770.

(11) Department of Defense, Northern Command, http://www.northcom.mil/

(12) Department of Health and Human Services, Centers for Disease Control and Prevention, Bioterrorism Preparedness Program, http://www.bt.cdc.gov/planning/continuationguidance/index.asp

(13) Department(s) of Homeland Security and Health and Human Services, Strategic National Stockpile, http://www.bt.cdc.gov/stockpile/index.asp

(14) Department of Homeland Security, Federal Emergency Management Agency, Capability Assessment for Readiness, http://www.fema.gov/pdf/rrr/car.pdf

(15) Department of Homeland Security, Federal Response Plan, http://www.fema.gov/rrr/frp/

(16) Department of Homeland Security, Federal Radiological Emergency Response Plan, http://www.fas.org/nuke/guide/usa/doctrine/national/frerp.htm

(17) Department of Homeland Security, FEMA Higher Education Program, http://training.fema.gov/emiweb/edu/

(18) Department of Homeland Security, Metropolitan Medical Response System, http://mmrs.hhs.gov/main/Resources.aspx

(19) Department of Homeland Security, National Disaster Medical System, http://www.ndms.dhhs.gov/

(20) Department of Homeland Security, National Incident Management System, http://www.dhs.gov/dhspublic/display?theme=42&content=496

(21) Department of Homeland Security, National Response Plan, http://www.dhs.gov/dhspublic/display?theme=43&content=1936

(22) Department of Homeland Security, National Urban Search and Rescue Program, http://www.fema.gov/usr/usrtask.shtm

(23) Department of Justice, Office of Domestic Preparedness, http://www.ojp.usdoj.gov/odp/

(24) Department of Veterans Affairs, *Veterans Health Administration, Emergency Management Program Guidebook*, Washington, DC, 2002, http://www1.va.gov/emshg/apps/emp/emp.htm

(25) Environmental Protection Administration, National Contingency Plan, http://www.epa.gov/oilspill/ncpover.htm

(26) Final Report on Mass Personnel Decontamination Best Practices and Guidelines for Radiologic Events, Technical Services Working Group, February 2004.

(27) Hazardous Substances Emergency Events Surveillance 1998 Annual Report, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Division of Health Studies, Epidemiology and Surveillance Branch, Atlanta, GA.

(28) Health Resources and Services Administration, Bioterrorism Preparedness Program, http://www.hrsa.gov/bioterrorism/index.htm

(29) Hick, J. L., "Protective Equipment for Health Care Facility Decontamination Personnel: Regulations, Risks and Recommendations," *Ann Emerg Med*., Vol 42, No. 3, September 2003, pp. 370-380.

(30) Homeland Security Leverages NOAA All-Hazards Network for Alerts and Warnings, Press Release, Office of the Press Secretary, Contact: DHS Press Office 202-282-8010, NOAA Press Office 202-482-4858, June 17, 2004.

(31) Horton, D. K., Berkowitz, Z., and Kaye, W. E., "Secondary contamination of emergency department personnel from hazardous materials events, 1995-2001," *Am J Emerg Med*., in press 2003.

(32) *Hospital Administration Terminology*, second edition, AHA, 1986.

(33) Hospital Bioterrorism Planning Matrix, Kansas Department of Health and Environment, Kansas Hospital Association, March 2004.

(34) Joint Commission on Accreditation of Healthcare Organizations, *The 2001 Joint Commission Accreditation Manual for Hospitals*, EC 1.4 and 1.6 (rev), Oakbrook Terrace, IL, 2001.

(35) Joint Commission Guide to Emergency Management Planning in Health Care, 2002.

(36) Kales, S. N., Polyhronopoulos, G. N., Castro, M. J., Goldman, R. H., and Christiani, D.C., "Injuries caused by hazardous materials accidents," *Ann Emerg Med*, Vol 30, 1997, pp. 598-603.

(37) Kirk, M. A., Cisek, J., and Rose, S. R., "Emergency department response to hazardous materials incidents," *Emerg Med Clinics North Amer*, Vol 12, 1994, pp. 461-481.

(38) Levitin, H. W. and Siegelson, H. J., "Hazardous materials: disaster medical planning and response," *Emerg Med Clinics North Amer*, Vol 14, 1996, pp. 327-48.

(39) Levitin, H. W. and Siegelson, H. J., *Mass Casualty Decon–Re-evaluating Existing Dogma*.

(40) Macintyre, A. G., et al, "Weapons of Mass Destruction Events With Contaminated Casualties, Effective Planning for Health Care Facilities," *JAMA*, Vol 283, 2000, pp. 242-249.

(41) McLaughlin, S. B., "The case for decontamination facilities in

hospitals," Management Monograph 055976, American Society for Healthcare Engineering–American Hospital Association, Chicago, IL, January 2002.

(42) Mileti, D., *Disasters by Design: A Reassessment of Natural Hazards in the United States*, Joseph Henry Press, National Academy of Science, Washington, DC, 1999.

(43) National Emergency Management Association, Council of State Governments, Lexington, KY, Emergency Management Assistance Compact, http://www.emacweb.org/emac/index.cfm?CFID=5327&CFTOKEN=28115803

(44) National Response Plan—Biological Incident Annex, Nuclear/Radiologic Incident Annex, Hazardous Material Incident Annex, Catastrophic Incident Annex.

(45) NFPA 99, Health Care Facilities, Chapter 12, Emergency Management.

(46) NFPA 1561, Emergency Services Incident Management System.

(47) NFPA 1999, Standard on Protective Clothing for Emergency Medical Operations, 2003 Edition.

(48) NIOSH Standard for Chemical, Biological, Radiological and Nuclear (CBRN) Full Face Piece Air Purifying Respirator (APR), April 2003 .

(49) Occupational Health and Safety Administration, Hazardous waste operations emergency response, 29 Code of Federal Regulations 1910.120.(c)(5), Washington, DC.

(50) Okumura , T., Suzuki, K., Atsuhiro, F., et al, "The Tokyo Subway Sarin Attack: Disaster Management, Part 1: Community Emergency Response," *Acad Emerg Med*, Vol 5, 1998, pp. 613-617.

(51) Okumura, T., Suzuki, K., Fukada, A., et al, "The Tokyo Subway Sarin Attack: Disaster Management, Part 2: Hospital Response," *Acad Emerg Med*, Vol 5, 1998, pp. 618-624.

(52) Part I—Systems Approach to Planning, Volume II—Hospital Emergency Departments: A Planning Guide for the Management of Contaminated Patients, Managing Hazardous Material Incidents, 2001, ATSDR, http://www.atsdr.cdc.gov/mhmi-v1-1.pdf

(53) Preliminary Recommendations to the Policy Coordinating Committee on Health Surge Capacity, Office of Public health Emergency Preparedness, Department of Health and Human Services, Version 1.2, August 15, 2003 .

(54) Recommendations for Hospitals Addressing Water Containment and Run Off During Decontamination Operations, California Emergency Medical Services Authority, Hospital and Healthcare System, Disaster Interest Group, June 2003.

(55) Recommendations for Hospitals: Chemical Decontamination, Staff Protection, Chemical Decontamination Equipments and Medication List, Evidence Collection, California Emergency Medical Services Authority, Hospital and Healthcare System, Disaster Interest Group, Original December 2001, update June 2003.

(56) Schultz , M., Cisek, J., and Wabeke, R., "Simulated exposure of hospital emergency personnel to solvent vapors and respirable dust during decontamination of chemically exposed patients," *Ann Emerg Med*, Vol 26, 1995, pp. 324-329. (Off-gassing modeling (Schultz) unventilated 16 x 20 room organic agents, 800 mL used to saturate mannequin's clothing, clothing removed at 5 min, concentrations of agent measured in breathing zone of decon personnel were far below IDLH for agents used (by extrapolation, would generate high levels of sarin, but still well within capability of available commercial APR organic vapor filters).)

(57) Standardized Emergency Management System, State of California Governor's Office of Emergency Services, http://www.oes.ca.gov/Operational/OESHome.nsf/Content/B49435352108954488256C2A0071E038?OpenDocument

(58) University of Colorado, Hazards Center, www.colorado.edu/hazards

(59) University of Delaware, Disaster Research Center, http://www.udel.edu/DRC/disdat/busbib.html

(60) U.S. Army Medical Research Institute of Chemical Defense (USAMRICD), http://chemdef.apgea.army.mil/

(61) U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), http://www.usamriid.army.mil/general/index.html

(62) U.S. Army Soldier and Biological Chemical Command (SBCCOM), http://hld.sbccom.army.mil/ip/detectors

(63) U.S. Government Interagency Domestic Terrorism Concept of Operations Plan, http://fema.gov/pdf/rrr/conplan/conplan.pdf

(64) "Using JCAHO standards as a starting point to prepare for an emergency & Analyzing your vulnerability to hazards," Special Issue, *Joint Commission Perspectives*, Vol 21, No. 12, December 2001, http://www.jcrinc.com/subscribers/perspectives.asp?durki=2517&site=10&return=1122

(65) Wetter, D. C., Daniell, W. E., and Treser, C, D., "Hospital preparedness for victims of chemical or biological terrorism," *Am J Public Health*, Vol 91, 2001, pp. 710-716.

(66) Zeitz, P., Berkowitz, Z., Orr, M. F., Haugh, G. S., and Kaye, W. E., "Frequency and type of injuries in responders of hazardous materials substances emergency events, 1996-1998," *J Occ Env Med*, Vol 42, No. 11, 2000, pp. 1115-1120.