

Best Practices for Hospital Preparedness

Executive Summary

Hospital preparedness for disasters has matured tremendously in the past decade, driven by the events of September 11, 2001 and the subsequent grant programs and conceptual attention to surge capacity and health incident management issues. One of the key tenets of hospital preparedness is that the hospital is an integral part of community disaster response and that hospital planning must be conducted as part of community planning; with engagement of partner hospitals, public health, clinics, emergency medical services, and emergency management, law enforcement, and other governmental and non-governmental stakeholders. Since 75-85% of patients will self-refer to the nearest hospital and not arrive by EMS, all hospitals must be prepared.

The overall goal of the healthcare facility is to continue to provide patient care services to the community during an incident. This requires assuring that the facility is safe, functional, and that adequate staffing is available. Secondary goals are to expand capacity to provide for increased patient demands (surge capacity) and provide specialized services such as care for contaminated patients or patients with highly contagious special diseases (such as SARS).

Disaster patient care often does not require providers to use specialized education, supplies, or techniques. However, the hospital incident management system is critical to assuring the organizational and logistical support to meet incident-generated demands by getting the right personnel and supplies to the right place at the right time to provide timely and effective patient care. The following primer provides background on “best practices” that hospitals may wish to adopt to improve institutional preparedness. This primer is not comprehensive, and does not address mitigation planning, nor continuity of operations issues such as utilities failures and information technology failures. Though this planning is also necessary, this document will emphasize preparedness and response activities involving a “typical” external incident.

Utility of these “best practices” and how they are implemented will vary depending on the size of the facility and its role in the community (e.g.: tertiary care, critical access hospital). Preparedness best practices are evolving, and it is the goal of the American College of Emergency Physicians and the Disaster Preparedness and Response Committee to continually seek out and evaluate new concepts and ideas and update this document to assure its continued relevance.

Section One – Planning

1. Emergency management plan (EMP)

The EMP is the administrative basis for the facility response. It details the process, policies, and authorities of facility emergency management including the planning committees, review cycles, and other topics.

- a. **Organization** – As of 2009, the Joint Commission (JC) has moved emergency preparedness requirements into a separate chapter in the compliance guidance. These requirements (Emergency Management standards 0.1-0.3) specify a preparedness committee, designation of emergency manager, exercise schedules, and other key components of the EMP. Hospital preparedness personnel should be familiar with this new chapter and its survey implications.
- b. **Hazard Vulnerability Analysis (HVA)** – The HVA is a summary of threats facing the community and the institutional preparedness for those threats. It allows the institution to prioritize preparedness and exercise activities to reflect events that would have significant impact on the community and are either most likely to occur or for which the facility has preparedness deficits. Excellent templates for HVA are available from the American Society of Healthcare Engineers (ASHE) and other sources.

The institution should conduct an HVA, ideally in conjunction with regional healthcare and emergency management partners, with review and updates annually.

- c. Process – Facilities should have an emergency manager that has the broadest background possible in emergency management, and this individual should work with community partners to assure the hospital EMP integrates with community and regional plans and processes. Hospitals should use the approach and background outlined in the excellent Veteran’s Administration Emergency Management for Healthcare Facilities.
- d. Emergency Operations Plan (EOP) – the EOP is a subset of the EMP and are the actions the institution takes in response to an incident. These may include Job Action Sheets, task cards, and a formal written plan that details the institutional response. The EOP should parallel daily processes as closely as possible. When daily processes are not appropriate or unworkable, simple processes must be used and frequent education performed to assure continued competence.

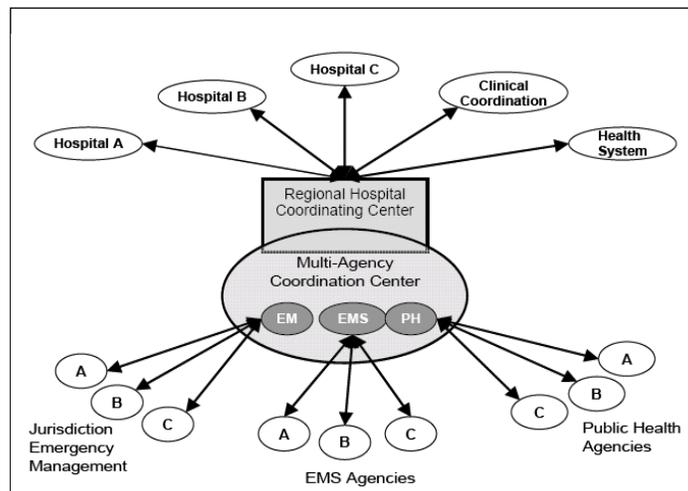
2. Cooperation

The hospital should be part of a pre-event “compact” or agreement with other hospitals that ensures appropriate distribution of patients during an incident with re-distribution as needed and staff / supply support for hospitals disproportionately affected. If the hospital cannot manage an incident independently, this allows a “tiered” response whereby the cooperating hospitals work together regionally to meet the incident demands. If the incident exceeds these resources, state and Federal aid may be required. Regional coordination of these efforts is critical to successful recognition of needs and delivery of resources to the most-affected facilities.

As the outpatient medical care sector encompasses resources that may be critical during a major disaster, especially one involving loss of infrastructure, planning should incorporate proximate outpatient medical care facilities. Institutions caring for special populations must also participate. Behavioral health and skilled nursing facilities may require support from surrounding hospitals or other agencies during an incident. Therefore, regional plans must also incorporate these entities.

The regional hospital group should work with public health, Emergency Medical Services (EMS), and Emergency Management to determine how the hospitals are represented in the overall incident response and how they interact with these agencies in Multi-Agency Coordination (MAC). An illustration of a possible MAC group is shown:

1 Figure 1 - Sample concept of operations for regional hospitals and clinics coordinating through a Multi-
 2 Agency Coordination Center (from AHRQ – see references/resources)
 3



Regional coordination mechanisms should include provisions for notification and coordination of activities (web-based system, conference calls via pre-arrangement, radio network), authorities, resource request, and allocation processes, regional decision-making for resource-poor situations, and agreements for staff and supply sharing.

Cooperative planning with private entities is encouraged, as the infrastructure, resources, and logistical support that a major corporate partner can provide to a hospital can be invaluable. Needs, resources, and agreements should be determined prior to an event. Emergency managers should also understand the need for expansion beyond single regional planning to include multiple regions, state, and federal responses. Access to these resources is available through the incident management system guided by individual state policies.

Section Two – Response

1. Incident Management

- a. System – The incident management system provides the organizational framework for response. Incident management terminology and structure are standardized according to the National Incident Management System (NIMS). The Hospital Incident Command System (HICS) provides a NIMS-compliant incident management system for hospital use. The Joint Commission and the federal government require compliance with these concepts. They are critically important in standardizing hospital disaster response coordination.
- b. Training – Hospital staff must be trained in incident management. Different levels of training are required based on the role the staff will take in an incident. Best practices may include:
 - i. “Awareness” training for all employees.
 - ii. IS100 HC or equivalent for personnel assuming a functional role below section chief (see references for course link).
 - iii. IS100 HC, 200 HC, and 700 for all section chiefs and command staff as a minimum.
 - iv. Frequent exercises including tabletop and functional.
 - v. Frequent competency assessments including brief, targeted assessments conducted by supervisors or web-based (e.g.: “where is your emergency operations plan located,” “show me how to work your disaster radio” as part of a series of questions / assessments).
 - vi. Multi-day exercises emphasize incident action planning cycles and planning for subsequent operational periods. These may “play” for only 1 to 2 hours each day but emphasize critical aspects of ICS such as transfer of command, briefings, incident action plans, and incident summaries.
- c. Hospital Command Center (HCC) – the HCC is the location from which the hospital manages an incident. Ideal characteristics of an HCC may include:
 - i. Location – Dedicated space is optimal, but if not possible, easily configurable conference room(s) or other locations are options. Space must be adequate to accommodate the demands of a large incident. The area must be secure, and ideally is located centrally in the facility. Restrooms should be close by.
 - ii. Communications – the HCC should have multiple phones and phone lines, internet access, television, amateur radio, public safety radio, internal radio/PA, and security camera access.

- iii. Equipment – in addition to computers, projector, fax machine(s), and the equipment noted above, the room should include incident vests/clipboards, office supplies, whiteboards, maps, resource books / reference materials, and refreshments.
 - iv. Power supply – emergency power should supply all outlets in the HCC and assure continued heat, ventilation, and air-conditioning to the room.
- d. Facility and Staff Support
- i. Behavioral health and spiritual care support for staff is critical. Assure spiritual care and Critical Incident Stress Management (CISM) personnel availability and scheduling of voluntary debriefing sessions after events. Assure that staff are assessed by co-workers for coping issues and behavioral problems.
 - ii. Staff needs – assure that staff have designated respite areas, access to food and refreshments, and access to phones and computers to contact home and family (including allowing long-distance calls from hospital phones).
 - iii. Facility engineers should have a checklist for facility operations in order to conduct a rapid assessment after an incident that affects the hospital. Engineers should have a plan to cope for 96 hours with utilities failures while maintaining hospital operations.
 - iv. Family support – providing support (including babysitting, adult care, feeding, and potential housing) to staff families may be critical to ensure that they are able to work. Pet services including pet-sitting, feeding, walking, and boarding are also important to facilitate staff reporting for work.

2. Communications

Internal communications – the hospital should have a range of methods to communicate with staff, patients, and families at the facility which may include:

- a. Overhead paging / public address system (should have separate system to advise / notify persons just outside the building – e.g.: those awaiting decontamination).
- b. Alphanumeric paging with pre-determined groups for emergency notification organized by function / level of activation (partial vs. full).
- c. Short message service (SMS) information delivery to key personnel / cellular phones.
- d. Internal information hotline and/or incident information available on intranet site.
- e. Radio systems for communication between critical staff or internal cellular system.
- f. Voice-over-internet protocol systems (which use the internet to carry voice messages to wireless receivers).
- g. Printed and scripted communications to patients and family members (infection control requirements, information on current protocols governing care delivery, support agency contact information, etc.).
- h. Runners.

External – hospitals should be able to reach the public, community partners and staff in order to communicate facility information, request assistance or advise that assistance is *not* needed. Mechanisms may include:

- a. Media messages targeted to staff - radio, television, other media information coordinated by hospital Public Information Officer (PIO).
- b. Internet/email information to staff.
- c. SMS, page groups / paging systems (particularly ones that do not depend on the facility switchboard to send pages / information).
- d. Wireless Priority Access / Government Emergency Telecommunications System – allows key personnel to communicate even when usual cellular / phone capacity is overwhelmed. The hospital should consider Telecommunications Service Priority program participation ensuring priority restoration of service following outages.
- e. Hotline that staff can call for further information about the incident and staffing / support needs.
- f. Public safety radio to Emergency Medical Services, Public Health, and Emergency Management partners.
- g. Public messages and talking points should be crafted by PIO. Techniques such as message mapping may be used to focus communications. Messages should emphasize what the hospital is doing to cope with the event and what services are / are not being provided during the event.
- h. Media
 - i. PIO should be trained in disaster communications and have pre-determined list of subject matter experts / spokespersons for the institution or health system.
 - ii. Press conferences and updates should be scheduled.
 - iii. Location for press should be pre-determined including need for power, phone lines, and parking for satellite trucks.
 - iv. Contact lists for major media outlets and community partners should be maintained and available to the PIO.
 - v. The hospital should be part of a community plan to use a Joint Information Center (JIC) when an incident affects multiple hospitals or jurisdictions. Regional hospital spokespersons should be identified pre-event.

3. Notification

How the hospital becomes aware of an event, gathers additional information to make a decision about activation, and notifies relevant staff and agencies helps the hospital effect a timely and proportional response to an incident. This system is comprised of:

- a. Information systems – how is the hospital made aware of an event? (EMS radio system, web-based alerting system, television, phone calls).
- b. Situational awareness – how is additional information gathered? Are the EMS dispatch centers phone numbers available? Is television available to key personnel in key areas including the Emergency Department, Hospital Command Center, and in the staff staging / labor pool area?

- c. Internal Staff notification – mechanism and scope of notification may be event dependent but the hospital should have the ability to reach all or select staff during an event and have policies that determine under what circumstances overhead pages are used, etc. There should be a fall-back plan in case communications are disrupted.
- d. External Staff notification – mechanism and scope as above. Predetermined paging groups for each level of activation and potentially by incident type should be available to operators. Ideally, capability to trigger these from off-campus locations should exist (web-based or phone based) in case of switchboard or other failures. Notifying staff via a hotline, paging, media, and/or other means that they are *not* needed is important to decrease staff over-response.

4. Activation

The hospital should identify staff pre-event that are authorized to declare an emergency. Specific codes or titles should be assigned to events (for example, Alert Orange for mass casualty incident, Alert Yellow for security event). Whenever possible, codes in a region should be standardized. Plain English is best unless there are specific reasons to use codes or terms.

The hospital administrator should sign the Emergency Operations Plan or otherwise formally delegate authority pre-event to the individuals that may serve as incident commander or declare an incident; ensuring that their authorities to change staff hours, call back staff, acquire resources and other actions taken as incident commander are authorized by hospital administration.

Activation of emergency plans should be scalable in order to ensure a proportional response.

- a. Smaller facilities may opt for “partial” vs. “full” activation of plans.
- b. Larger facilities may feel that “Levels” better meet their needs (e.g.: Level 1 – incident can be managed with internal resources, Level 2 – limited outside staff or agency response is required, Level 3 – disaster, major external resources required).
- c. Hospitals may also use a “standby” mode in order to get personnel moving toward incident posts and anticipating actions to be taken while additional information is gathered about an event.

The levels of activation including communication, degree of callbacks performed, supplies mobilized, and partners notified should be documented in the Emergency Operations Plan. A table or graphic tool printed on a pocket card that guides the person making the declaration to a level of response appropriate for the incident may be helpful.

5. Mobilization / Surge Capacity / Demobilization

Effective use of hospital resources and request for outside assistance hinges on knowledge of resources available within the institution. Lists of emergency supplies should be available in the HCC. Stocks of common medications, cots, and other emergency supplies should be purchased ahead of time in relation to the size and mission of the institution. The facility should have plans to operate for 96 hours without supplies / support from outside the region. Information on current bed capacity (both usual capacity and expanded capacity – for example doubling up single rooms or putting patients on cots temporarily) should be immediately available to the HCC and updates provided on an ongoing basis. Three key areas determine the ability of a facility to increase capacity to care for patients during a disaster (surge capacity):

- a. Space issues – Additional beds and flat-space areas should be identified prior to an event. During an event, are additional triage, treatment areas needed? Is OR space needed? During a “full activation” a reasonable goal may be to open 25% of a major hospital’s critical care and operating room capacity while sizing up the situation. Plans for supporting alternate care locations, both on the

hospital campus (may be inside, utilizing flat-space areas, or outside in tents or other structures) and in the community, are also needed.

- b. Staff / personnel issues – how many AND what type of staff are needed may vary by incident. Mechanisms for calling back an appropriate number of staff may include initial, automatic callbacks with subsequent callbacks dependent on staffing worksheets and situational information. Staff should understand where to report (to their work location / unit or to staff staging). Staffing for the next operational period and subsequent staffing needs should be part of the planning process. Use of outside staff or volunteer staff should be detailed ahead of an event. Credentialing of assisting staff, check-in, orientation, mentoring processes, and a staff staging/labor pool should be determined prior to an event.
- c. Supply / equipment issues (including supply chain) – hospitals in a geographic area often depend on same vendors/suppliers. Pre-existing agreements may be needed with additional vendors or with jurisdictional emergency management. The mechanism to request supplies from community private and public partners should be understood and practiced.
 - i. Some resources must be cached and par levels increased - including central supply (chest tube trays, IV fluids, etc) and pharmacy (morphine, sedatives, antibiotics).
 - ii. Many nominal cost/space items can be invaluable during a disaster (morphine, adaptive dressings for burns, for example) and cannot easily be substituted for or obtained quickly.
 - iii. A cache of disaster supplies can be designated pre-event for delivery to the ED and other areas.
 - iv. A supply staging area should be established to facilitate deliveries if the ED or other recipient area is large.
 - v. A departmental supply officer that can coordinate resource requests and receipt for select departments (particularly the ED) may be helpful for larger institutions.
 - vi. A supply officer and adjunct receiving area for the institution may be required depending on the magnitude of supplies requested or arriving unsolicited.

Demobilization / recovery – during an incident, a person within the planning section should be designated to begin planning for recovery phase needs (staff support, re-supply, discharge planning, patient transfers) and demobilizing surplus staff and activated resources to return the facility to daily operations as rapidly and smoothly as possible. As part of this, comprehensive expense tracking should be initiated as quickly as possible to improve the potential for reimbursement.

6. Facility Security and Resilience

- a. Natural disaster – the facility plans should plan for natural disasters according to the local Hazard Vulnerability Analysis (for example tornados, earthquake, hurricane, ice storm). This should include:
 - i. Identification of likely impact on facility including infrastructure and safety issues.
 - ii. Mitigation of effects (e.g.: locating generators above ground floor to avoid flooding).
 - iii. Preparedness for effects (e.g.: stocking bottled water and food sufficient for several days).
 - iv. Source and coordination for forecasting / incident information.

- v. Pre-event actions (for example during hurricane approach).
 - vi. Event actions (for example moving patients away from windows during tornado warning).
 - vii. Post-event actions (including focused damage assessment and initial incident actions).
- b. Security – the facility plan should account for:
- i. Ingress / egress control – including an access control plan to protect the facility. May include posting personnel at key entrances/exits and having staff report only to select entrances. Ability to control entrances electronically is optimal. Access control policies should provide for facility lock down in cases where movement of staff, patients, and the public must be severely restricted. Examples include biological or radiological terrorist attacks and pandemics.
 - ii. Security augmentation – plans should be in place to supplement security staffing as well as provide higher levels of staff protection (armed guards, implementation of patient/visitor screening, etc.)
 - iii. Security plans for infant abduction, civil unrest, bomb threat / device found, “white powder incidents,” active shooter, and other threats should be developed and shared within the institution.
 - iv. Traffic control plan for disasters should be developed, including potential need for staff rally points away from the facility from which they can be bused or otherwise transported to the hospital.
 - v. Staff access – agreements with emergency management should be in place to allow staff to cross certain barriers to report to work if other routes are not possible.
- c. Evacuation of facility – the facility plans should account for:
- i. Decision-making authority and process involved in an evacuation decision.
 - ii. Plans for partial evacuation (both horizontal and vertical) including requirements for personnel and resources.
 - iii. Plans for complete facility evacuation including personnel, supply, transportation, record-keeping, patient tracking, and patient transfer arrangements.

7. Patient Care

- a. Triage – there are three types of triage: primary, secondary, and tertiary. The hospital must have policies and procedures for all three types.
- i. Primary triage – triage upon first arrival to the hospital. EMS units should be directed to a single area that can maintain traffic flow. A separate area for self-referred patients may be needed – this area may need to be much larger than the usual ED triage area. Supplies for this area must be designated pre-event and quickly available. A triage officer (experienced physician or nurse) should quickly evaluate each patient arriving and assign them to a treatment or waiting area. The hospital should coordinate with local EMS agencies to assure that triage tags are used / preserved appropriately if needed. Triage tags, may be applied at this stage.
 - ii. Secondary triage – after initial assessment, prioritization may be required for ‘bottleneck’ resources such as computed tomography, operating rooms, or patient transfers. Depending on the event type a senior surgeon or emergency physician should provide ‘traffic control’ for the

department to determine priorities and assure that patient flow to these areas is as efficient as possible. This person should have access to electronic patient records, manual sheets for tracking disaster patients, and radio / phone connections to relevant departments (radiology, operating room desk, hospital command center).

- iii. Tertiary triage – the least practiced or familiar form of triage, this involves triaging patients who have received advanced or ongoing interventions to determine if the patient is appropriate for discharge (reverse triage) to make room for incoming patients or is appropriate for transfer to a lower level of care (from ICU to floor) to free up critical care beds.

If this type of triage is performed in a resource-limited environment and will likely result in morbidity or mortality for affected patients, it is critical that this triage be:

1. Performed by experienced critical care staff.
 2. Performed in the setting of systematic institutional implementation of systematic resource allocation policies (see below).
 3. Only performed when all regional facilities are in a similar situation, when resources cannot be obtained in a timely fashion, and when emergency health powers acts have been activated to provide liability relief for providers.
 4. Performed using the best clinical predictive models available to assure the most just decisions are reached.
- b. Medical treatment - Depending on the incident demands, initial treatment should focus on either definitive or damage control care. It is important that early in the event the most critical patients receive care and that capacity is maintained for additional critical patients – leaving green (and even select yellow) patients in a “holding area” or moving them to alternate care sites outside the emergency department if needed until it is clear that resources are adequate to provide care to these groups.

In order to preserve resources clinical assessments and temporizing care should be emphasized (splinting based on deformity / pain awaiting adequate radiology resources, bandaging lacerations until repair can be undertaken, for example). Consistency in approach is key, and depends on departmental situational awareness within the ED and in the OR.

Simple paper charting should be implemented by the IC / Casualty Care Supervisor as needed to keep up with volume. A disaster registration system that is familiar, easy, and allows matching of lab and radiology results should be in place (for example, using Hollister numbers usually used for blood banking and unidentified patients). Ancillary services should have plans to streamline processes and reduce services provided (for example, laboratory may restrict all lab requests during an Alert Orange to certain basic labs).

Alternate Care Sites and Public Health interventions – If a major disaster occurs and regional hospital capacity is overwhelmed, non-hospital location(s) for patient care may be required. These may best be planned at the regional level, though particularly in smaller communities they may be directly affiliated with the hospital. The function and role of these sites may vary according to the community needs and resources and may include patient screening and triage, early treatment, special medical needs sheltering, and hospital overflow patient care. Pre-event designation of these sites with partner hospitals, Emergency Management, Public Health, and EMS is crucial to their success. The level of care provided is usually very basic and intended to allow hospitals to concentrate the critically injured and ill within their walls pending evacuation of the excess patient load to other areas (or until a pervasive event, such as a pandemic, eases).

Public health may also require assistance from healthcare systems to staff neighborhood screening centers, special needs shelters, vaccination sites, and other programs. Such assistance should occur in the setting of Multi-Agency Coordination and realistic expectations of roles and responsibilities should be worked out ahead of an event.

c. Transportation

- i. Internal – Transport personnel, carts, and wheelchairs should be brought to the ED / triage area per protocol. Additional collapsible carts / stretchers / backboards, or soft stretchers may be stockpiled. Maps should be available for transporters if needed. Transportation assets should be staged and a coordinator should be in contact with the secondary triage officer and others that may control patient disposition so that they can quickly take patients to other areas of the hospital for care and evaluation.
- ii. External / referral – Facilities may need to transfer critical or specialized patients (e.g. burn patients) to other institutions. Early identification of patients eligible for transfer and arrangements with transportation agencies and referral centers should be planned pre-event. There may be cases in which several hospitals are trying to use the same facilities and transport agency and regional coordination may be required. Identification of back-up patient transportation agencies and a good understanding of the resources available and their response timeframe are important when usual transfer mechanisms are unavailable or saturated. Coordination of information with the receiving hospital should be established. If patients are unidentified it may be helpful to obtain a digital photo prior to transfer so that confusion is minimized with definitive identification / tracking. Transportation staging areas that can accommodate multiple ground or rotor-wing ambulances should be planned in case large-scale patient movement needs to occur. In catastrophic events, use of the National Disaster Medical System (NDMS) may be necessary. Hospitals should understand the process for an outbound NDMS evacuation from their area.

d. Patient tracking

- i. The hospital should use a mechanism for registering and tracking patients presenting during a disaster. Disaster tags, radiofrequency identification (RFID) devices, bar codes, and temporary patient bands may be used. All have advantages and disadvantages. Ideally, the system should be inexpensive, used on a daily basis, and be able to easily expand to meet incident demands.
 - ii. A mechanism should be in place to rapidly assemble disaster patient lists and dispositions using templates or an electronic system within the facility. A mechanism of coordination of patient lists (ideally web-based and in real time) with community agencies (law enforcement, American Red Cross, etc.) to facilitate family re-unification should be in place. Note that this type of information-sharing is HIPPA compliant.
 - iii. Regional agreements specifying a single source and mechanism for obtaining patient information via hotline and/or internet should be arranged with jurisdictional agencies or relief agencies (American Red Cross) so that this can occur within the hour after an event. A regional agreement and mechanism for a Family Support and Reunification Center should also be in place, with command responsibility, operations, required resources, and services / staffing determined in advance of an event.
- e. Behavioral health - Behavioral Health has diverse responsibilities during a crisis including family reunification, spiritual support, staff support, and psychological triage and observation. Because of this, it is beneficial to establish it as a separate branch under the Operations Section.

- i. In order to supplement facility staff, regional mutual aid ‘strike teams’ to assist / augment hospitals in need may be developed. These may be drawn from other healthcare facilities or community partners and can be extremely valuable when a few institutions are disproportionately affected. These teams may also be used between regions with appropriate agreements.
 - ii. Procedures and location for psychological triage should be identified, and qualified professional personnel should be available.
 - iii. As professional staff will be in great demand, training a much wider cross-section of staff in psychological first aid pre-event can contribute significantly to staff and patient resilience and recognition of dysfunctional behaviors.
 - iv. A behavioral health support area should be established in a quiet, comfortable area of the facility. Casualties initially identified as psychological can be observed by professional staff and de-escalated as needed until ready for discharge or triaged to admission. Food, beverages, and at least some medical personnel presence are required at this location.
 - v. Family support center – in addition to participating in planning for a community family support and reunification center the hospital may have to provide these services when it is the primary receiving hospital for victims (for example, from a school bus crash).
- f. Catastrophic Event Policies – during a catastrophic event or a situation in which the demands of the event far exceed available resources, the facility plan must account for:
- i. Coordination of resource requests / sharing with partner facilities.
 - ii. Institutional policies for emergency credentialing and privileging including use of Medical Reserve Corps (MRC), Disaster Medical Assistance Teams (DMAT), and other personnel from neighboring hospitals.
 - iii. Policy on use of family members / lay persons to provide non-clinical patient support (meal service, hygiene assistance) should also be established.
 - iv. Institutional process for determining adaptive strategies and temporizing measures within incident command system / incident action planning cycle – this should include prioritization of facility services and prioritization of personnel time (e.g.: reduce record-keeping and administrative demands, focus respiratory care personnel on ventilator management, focus nursing on patient assessment and medication administration, use lesser-trained staff for less technical / non-clinical tasks).
 - v. Institutional process for systematic clinical care and triage decision-making including the roles and responsibilities of a triage team.
 - vi. Administrative and legal support for the above actions to include state emergency health powers act / state of emergency declarations. Each state has unique protections and powers and hospitals must understand state plans and the scope of emergency declarations prior to an event occurring.
- g. Fatality management – The facility should have on-site capacity for temporary fatality management and agreements with the medical examiner and public health for mass fatality management should be in place. Adequate body bags, storage space, and patient tracking / records should be available. If needed, agreements with refrigerator trucking companies may be useful if the deceased cannot be quickly moved to a community / jurisdictional disaster morgue.

Section Three – Special Situations

1. Chemical – the healthcare facility must have plans that account for:

- a. Participation in Local Emergency Planning Committees (LEPC) as mandated by Title III of the Superfund Amendments and Reauthorization Act of 1986. These groups work together to evaluate, understand and communicate chemical hazards in the community and develop appropriate emergency plans in case of accidental release of these chemicals.
- b. Determining the need for facility evacuation vs. shelter in place when the facility is threatened by contamination – this includes knowledge of air-handling capabilities including particulate filtration and pre-existing liaison with emergency management and public safety agencies that will have plume models and other information. Options for provision of victim decontamination should also include utilization of local Hazardous Materials and Radiological Response Teams.
- c. Providing victim decontamination capabilities/capacity consistent with the hospital's mission (e.g.: Level 1 trauma center should be able to decontaminate multiple patients simultaneously with multiple providers in Personal Protective Equipment (PPE), small community hospital goal to decontaminate a few patients with limited trained staff).
- d. Providing victim decontamination to special needs populations including (but not limited to) those with limited mobility, sight, hearing, and those at the extremes of age.
- e. Providing decontamination team training and equipment at minimum consistent with OSHA Hospital 'First Receivers' guidance.
- f. Stocking antidotes as determined by facility HVA (nerve agent antidotes, cyanide antidote kits).
- g. Evaluation, clean-up, and disposal of hazardous wastes by contracted firm / agency.

2. Radiologic – the healthcare facility should plan for appropriate:

- a. Detection (including continuous monitoring systems for ED and ambulance entrances for at-risk facilities).
- b. Screening, surveying, dosimetry, and radio-isotope identification equipment concordant with community risk profile.
- c. Protocols and trained personnel for screening and decontamination.
- d. Access to Radiation Safety Officer (RSO) or health physicist for consultation.
- e. Involvement of other public safety / public health agencies as required and knowledge of local, state, and Federal resources for information.

3. Burn / Blast – facility plans should account for:

- a. Bomb threats / potential devices within the facility (including tables to define internal evacuation distances, etc.)
- b. Specific supply issues – for example, requirements of burn patients for large amounts of narcotics and intravenous fluids based on calculations of usual use for average critical burn / crush injury patient.
- c. Integration of hospital resources with community / regional burn planning – what is the expected role of the facility and thus, what are the policy and supply requirements.

4. Children – facility plans should account for:

- a. Pediatric-specific critical care supplies for stabilization or definitive care depending on the hospital's role.
- b. Staff education on disaster medical care and other issues related to children.
- c. Integration of hospital resources with community / regional pediatric planning – what is the expected role of the facility and thus, what are the policy and supply requirements?

5. Infectious disease emergencies – facility plans should account for:

- a. The detection and reporting of highly infectious or unusual diseases within the institution and with infection control and public health partners.
- b. Infection control protocols for the spectrum of possible contagious diseases presenting to the facility.
- c. Plans for triage, ED management, patient care, patient movement, isolation, and cohorting.
- d. Plans for screening patients in outpatient settings.
- e. Plans for screening staff for illness.
- f. Plans for provision of mass prophylaxis / vaccine to staff and patients.
- g. Personal protective equipment – ideally including stockpiles of masks and other supplies sufficient for an infectious disease disaster including an influenza pandemic.
- h. A pandemic influenza plan detailing facility strategies during the different stages of a pandemic (also see above, crisis standard of care).
- i. Liaison with public health, Emergency Medical Services, and area hospitals and clinics to assure information sharing and joint decision-making during community infectious disease events, ideally including pre-determined actions that area facilities will take to accommodate the demands of a highly contagious disease outbreak (e.g. Severe Acute Respiratory Syndrome).

Section Four - Education and Exercise Plan

- 1. Incident management education – all personnel should have an awareness level understanding of the incident management system used. Personnel with leadership responsibilities must complete NIMS or HICS training. This training should include exercise experience as part of the training process.
- 2. Additional education (decontamination, radiologic, behavioral health / psychological first aid, etc.) – The facility should develop a training plan, identifying the workforce and education required to provide awareness, knowledge, and proficiency level competencies for the target employees and groups. Ideally, national curricula or regional curricula and training may be used to reduce development requirements.
- 3. Refresher education and maintaining skills can be difficult. Programs such as a decontamination team program must be integrated into many facility functions (employee health respiratory protection program, safety and emergency management, skills competency in personal protective equipment, maintenance of knowledge base in hazardous materials medical care, for example). Coordinators must assure that enough training is provided to at least maintain competency. It may be helpful for each department to develop a list of emergency preparedness competencies, many of which can be assessed informally during on-shift time by supervisors using simple question-and-answer checklists.

4. Just-in-time education will be necessary to respond to specific threats. Information prepared pre-event should be available on common scenarios that may threaten the hospital (weather-related, bomb / blast trauma, dirty bombs, 'white powder incidents', coping with disasters, etc.) which can be modified as needed. The facility should determine a process for urgent training and just-in-time fit-testing for highly contagious diseases (protective equipment use, doffing / donning competencies, and respirator selection and use). Close collaboration with educational staff and public information officers can facilitate this process during an event.
5. Exercises – The design of disaster exercises should reflect the results of hazard vulnerability analyses and risk assessments as well as population demographics for those served by the hospital.
 - a. Tabletop / workshop: should be carried out frequently at the hospital, using a variety of scenarios that can be expanded far beyond usual functional exercises. May be limited or catastrophic in scope depending on number of departments involved. May be particularly effective for administrative personnel to refresh decision-making skills in a group setting.
 - b. Functional – limited: involves functional testing of a small component of overall response plans (for example, testing of an emergency paging system). These component evaluations may occur frequently and within departments.
 - c. Electronic/interactive simulation: additional training should be offered to all hospital members that participate in the delivery of patient care during a disaster. Many options for training exist, including electronic simulation platforms such as the American College of Emergency Physicians' Code Orange exercise.
 - d. Functional – facility: generally involves activation of the facility Emergency Operations Plan and scenario-based testing of key common and specific response components including activating the Hospital Command Center. Should be conducted at least twice a year, with at least one of the exercises involving community partners (see below).
 - e. Full-scale functional (community): a multi-disciplinary exercise that tests the integration of response to an event occurring in the community involving multiple stakeholders. These are generally complex to plan, but ideally hospitals should participate in at least one exercise per year that meets this description. These exercises should be planned consistent with the Homeland Security Exercise and Evaluation Program (HSEEP) to assure congruency with community agency formatting and planning.

References and Resources

Introduction

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4. Rubin JN. Recurring Pitfalls in Hospital Preparedness and Response. <http://www.homelandsecurity.org/journal/Articles/rubin.html> - overview of some key stumbling blocks that hospitals face in preparing for disasters.

Section 1 – Planning

Emergency Management Plan

1. Joint Commission Emergency Management Requirements – (<http://tinyurl.com/jchem09>)

2. Other Joint Commission Planning Publications – Resources for developing community-wide approaches to healthcare disaster planning.
 - a. Standing Together: An Emergency Planning Guide for America's Communities: http://www.jointcommission.org/PublicPolicy/ep_guide.htm (2005)
 - b. [Health Care at the Crossroads: Strategies for Creating and Sustaining Community-wide Emergency Preparedness Systems](http://www.jointcommission.org/PublicPolicy/Emergency_Preparedness.htm): http://www.jointcommission.org/PublicPolicy/Emergency_Preparedness.htm (2003)
3. Hazard Vulnerability Analysis –American Society of Healthcare Engineers (ASHE) - <http://www.ashe.org/ashe/products/pubs/hazvulanalysis.html> (requires login or fee), Kaiser-Permanente's spreadsheet-based model is available at: www.emsa.ca.gov/dms2/kp_hva.xls
4. Emergency Management Principles and Practices for Healthcare Systems. The Institute for Crisis, Disaster, and Risk Management (ICDRM) at the George Washington University (GWU); for the Veterans Health Administration (VHA)/US Department of Veterans Affairs (VA). Washington, D.C., June 2006. Available at <http://www1.va.gov/emshg/page.cfm?pg=122> – comprehensive program materials for healthcare emergency management – a foundational curricula.

Cooperative Planning

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2. IS 701 – Multi-Agency Coordination Systems. National Incident Management System (NIMS). Federal Emergency Management Agency Emergency Management Institute. Emmitsburg, MD, 2007. <http://emilms.fema.gov/IS701/index.htm>. On-line training course on Multi-Agency Coordination.
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Section Two – Response Incident Management

1. Hospital Incident Command System. HICS IV August 2006. California Emergency Medical Services Authority. <http://www.emsa.ca.gov/hics/hics.asp> (accessed April 20, 2007). A NIMS-compliant and the most accepted incident management system for healthcare facilities.
2. National Incident Management System. Federal Emergency Management Agency – Department of Homeland Security.
 - a. <http://www.fema.gov/emergency/nims/index.shtm> - The NIMS homepage – background information and links to many documents and training.
 - b. http://www.fema.gov/emergency/nims/compliance/assist_non_govt.shtm - provides documents related to hospital / healthcare compliance requirements.
 - c. http://www.fema.gov/emergency/nims/nims_training.shtm - training information including course and

instructor requirements.

- d. <http://training.fema.gov/EMIWeb/IS/is100HC.asp> - link to on-line 'Introduction to incident management for healthcare workers'.
- e. <http://training.fema.gov/EMIWeb/IS/is200HC.asp> - link to on-line course 'Applying ICS to Healthcare Organizations' required for all assuming management / supervisory positions in incident management within a healthcare facility.
- f. <http://training.fema.gov/emiweb/is/is700.asp> - link to on-line course 'National Incident Management System – An Introduction' required for command and general staff.

Communications

1. Wireless Priority Service Information: http://wps.ncs.gov/program_info.html
2. Government Emergency Telecommunications System: <http://gets.ncs.gov/>
3. Telecommunications Service Priority Program: <http://tsp.ncs.gov/>
4. Glik DC. Risk Communication for Public Health Emergencies. Ann Rev Public Health 2007;28:33-54.
5. NIMS Public Information Systems IS-702. <http://www.training.fema.gov/EMIWeb/IS/is702.asp>.
6. Pan-American Health Organization, Centers for Disease Control and Prevention. Risk Communication Self-Instruction Course. <http://www.cepis.ops-oms.org/tutorial6/i/index.html>
7. Covello, VT. Message mapping, risk, and crisis communication. <http://www.dmh.missouri.gov/ada/provider/sti/04/MessageMapping%20in%20High%20Risk%20Situations20.04.pdf>.
8. United States Environmental Protection Agency. Message Mapping. <http://www.epa.gov/ordnhsrc/news/news040207.html> (includes link to video instruction on message mapping – 40 minutes).
9. Greater NY Hospital Association. Emergency Communications Options PDF available at: <http://www.gnyha.org/176/Default.aspx>.

Notification

Activation

Mobilization / surge capacity / demobilization

1. AHA Hospital Preparedness for Mass Casualties Aug 2000. <http://www.hospitalconnect.com/ahapolicyforum/resources/disaster.html>
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4. Price Waterhouse Coopers. Closing the seams.
<http://www.pwc.com/extweb/pwcpublishings.nsf/docid/9CEC1E9BD3BCAC478525737F005C80A9>.
Summary of hospital preparedness gaps and issues.
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<http://bepreparedcalifornia.ca.gov/EPO/CDPHPrograms/PublicHealthPrograms/EmergencyPreparednessOffice/EPOProgramsServices/Surge/> - extensive toolkits and guidance on hospital surge capacity.
6. Schultz CH, Stratton SJ: Improving Hospital Surge Capacity: A New Concept for Emergency Credentialing of Volunteers. *Ann Emerg Med* 2007;49:602-609. DOI:10.1016/j.annemergmed.2006.10.003

Facility Security and Resilience

1. Greater NY Hospital Association. Hospital Security Resources: <http://www.gnyha.org/195/Default.aspx> - includes checklists and advisory documents.
2. Schultz CH, Koenig KL, Lewis RJ: Implications of Hospital Evacuation after the Northridge, California, Earthquake. *N Engl J Med* 2003;348:1349-1355.

Patient Care

1. Modular Emergency Medical Systems. Resources including the Community Planning guide and Acute Care Center Concept of Operations. – details planning for austere hospitals and overviews how hospitals and other healthcare assets combine to provide surge capacity and resilience. <http://www.nnemrs.org/documents/>
2. United States Department of Health and Human Services. National Disaster Medical System. <http://ndms.dhhs.gov/> (accessed May 22, 2006).
3. United States Department of Health and Human Services – Office for Civil Rights. <http://www.hhs.gov/ocr/hipaa/emergencyPPR.html> - tools for HIPAA compliance during disasters.
4. Phillips SJ, Knebel A, eds. Providing Mass Medical Care with Scarce Resources: A Community Planning Guide. Prepared by Health Systems Research, Inc., under contract No. 290-04-0010. AHRQ Publication No. 07-0001. Rockville, MD: Agency for Healthcare Research and Quality. 2006.
<http://www.ahrq.gov/research/mce/mceguide.pdf> - discusses adjusted standards of care and how to implement them.
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http://www.jointcommission.org/PublicPolicy/surge_hospitals.htm (2005).
7. Chest supplement – May 6, 2008 – Collection of articles on scarce-resource critical care including medical care and ventilator allocation. http://www.chestjournal.org/content/133/5_suppl
8. Minnesota Department of Health. Patient Care Strategies for Scarce Resource Situations.
<http://health.state.mn.us/oep/healthcare/scarcestrategies.html> - framework for providing the best care possible in a catastrophe examining oxygen, medications, hemodynamic support / IV fluids, ventilators, and staffing.
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Operations Guide. http://www.neptsd.va.gov/ncmain/ncdocs/manuals/nc_manual_psyfirstaid.html

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Section Three – Special Situations

Chemical

1. United States Dept. of Labor: Occupational Safety and Health Administration (OSHA). Best Practices for the Protection of Hospital First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances. http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html - a foundational resource for hospital hazmat preparedness – covers selection of personal protective equipment, decontamination, and programmatic information.
2. Hick JL, Penn P, Hanfling D, Lappe MA, O'Laughlin D, Burstein JL. Establishing and Training Healthcare Facility Decontamination Teams. *Ann Emerg Med* 42:381-390;2003. – provides an outline and overview of issues involved with training hospital decontamination teams.

Radiologic

1. Radiation Emergency Assistance Center / Training Site. Managing Radiation Emergencies – Guidance for Hospital Medical Management. <http://orise.orau.gov/reacts/guide/care.htm> - on-line resources for medical management of radiation emergencies.
2. United States Dept. of Health and Human Services. Radiation Event Medical Management. <http://www.remm.nlm.gov/> - on-line resources for medical management can be downloaded in its entirety to local computer.
3. Centers for Disease Control and Prevention. Radiologic Terrorism: A Toolkit for Emergency Services Clinicians. <http://emergency.cdc.gov/radiation/toolkit.asp> - includes pocket guide for radiological terrorism, fact sheets on radiation illness and injury, and instructional videos.
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Children

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2. Agency for Healthcare Research and Quality. Pediatric Terrorism and Disaster Preparedness – A Resource for Pediatricians. <http://www.ahrq.gov/research/pedprep/resource.htm>.

Infectious Disease

1. Centers for Disease Control and Prevention. <http://emergency.cdc.gov/bioterrorism/>. – homepage for agent information sheets and bioterrorism information.
2. United States Dept. of Health and Human Services. Healthcare Planning for Pandemic Influenza. <http://pandemicflu.gov/plan/healthcare/index.html>. - variety of planning resources and checklists for hospitals, clinics, and EMS.

Section Four – Exercises and Training

1. Staff Education – Training of staff to respond to a mass casualty incident - <http://www.ahrq.gov/clinic/epcsums/hospmcisum.htm>.
2. Homeland Security Exercise and Evaluation Program – https://hseep.dhs.gov/pages/1001_HSEEP7.aspx has many resources from on-line training in exercise conduction to after-action formatting. Also <https://hseep.dhs.gov/support/VolumeII.pdf> - guide to exercise planning including process, types of exercises, etc.
3. Disaster exercise guidebook – Metropolitan Hospital Council of Chicago. Guide is for an influenza exercise but contains many specific suggestions, forms, and other valuable information. [http://www.iroquois.org/cmt/cf/documents/EP%20Exercise_Guidebook%20\(MCHC\).pdf](http://www.iroquois.org/cmt/cf/documents/EP%20Exercise_Guidebook%20(MCHC).pdf)
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Approved ACEP Board of Directors
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