Hospital Medical Surge Planning for Mass Casualty Incidents

This guidance provides planning recommendations for mass casualty incidents (MCI) as related to hospital and health care facility emergency preparedness planning in the United States. The guidance is for public and private health personnel who are involved in emergency management, disaster preparedness, planning, response, mitigation, protection, and/or recovery. This guidance is based upon current knowledge regarding MCIs and may be updated as needed.

Overview

The term "Mass Casualty" refers to a combination of patient numbers and care requirements that challenge or exceed a community's ability to provide adequate patient care using day-to-day operations. A Mass Casualty Incident (MCI) in any community has the potential to quickly exhaust resources available for response. Hospital response capability is dependent on having a comprehensive emergency management plan inclusive of the worst case scenario, like an MCI, to enhance the level of readiness required to respond to a community's health care needs. The sudden arrival of a surge of patients presents a logistical challenge to rapidly process a large number of casualties through the system.

This document is the result of a review of literature and best practices related to MCIs. Information and resources are provided to augment existing emergency operations and management plans related to MCI preparedness, response, and recovery

Purpose

The purpose of this document is to serve as a resource for developing hospital Medical Surge plans for anticipated, progressive, insidious ('notice' events), and sudden onset ('no-notice' events). This information supports local planning and a hospital's operational response. Hospitals may choose to utilize or adapt any of the planning recommendations, sample checklists, or other resources based on the needs of their facilities.

MCIs include those that occur with some level of frequency, also known as "conventional MCIs" (transportation incidents, burn, and severe weather events); chemical, biological, radiological, or nuclear agents from an unintentional or accidental release or act of terrorism; or, catastrophic health events (nuclear detonation, major explosion, major hurricane, pandemic influenza, or others).

Planning for disasters has changed over the years. A government-centric approach is not enough to meet the challenges posed by a catastrophic incident. Focus has shifted to a 'Whole Community approach' which leverages all of the resources of a community in preparing for, protecting against, responding to, recovering from and mitigating against all hazards. Collectively, a team of partners may work together to meet the needs of an entire community. This larger group includes: federal partners; local, tribal, state and territorial partners; non-governmental organizations including faith-based and

non-profit groups; private sector and industry partners; and, individuals and families. When planning and implementing disaster strategies both the composition of the community and the individual needs of community members, regardless of age, economics, or accessibility requirements, should be accounted for. For the healthcare system, the whole community approach combines public and/or private community health and medical partners. This would include: public health; hospitals and other healthcare providers; emergency medical service providers; long-term care providers; mental/behavioral health providers; private entities associated with healthcare (hospital associations, etc); specialty service providers (dialysis, pediatrics, woman's health, stand alone surgery, acute/urgent care, etc.); support service providers (laboratories, pharmacies, blood banks, poison control, etc.); primary care providers; community health centers; tribal healthcare; and, federal entities (National Disaster Medical System (NDMS), Veterans Administration (VA) hospitals, Department of Defense (DoD) facilities, etc.). For this document, community healthcare system partners encompass these entities.

Hospitals should work cooperatively with other community healthcare system partners, supporting a chain of incident-related communication. This document supports hospital alignment of emergency operation and management plans with community preparedness and response organizations. These emphasize a capacity- and capabilities-based approach to disaster planning, preparedness, response, and recovery activities.

The information and resources presented in this document support:

1. Enhancing health care coalition development with local response partners by aligning local planning for MCIs from an all-hazards perspective.

2. Strengthening the operational response framework used by hospitals and local partners in a coordinated approach toward incident command structure, human and material resource management, and treatment space for patient surge.

Information and resources featured in this document are intended for licensed hospitals with dedicated emergency departments, those with Florida Department of Health (FDOH) Trauma Center designation, and hospitals that provide emergency services at off-site locations.

Terminology

There are many terms that are useful in understanding emergency management and operational planning for health care organizations. A list of terms is identified by the U.S. Department of Health and Human Services. Select terms are included at the end of this document.

MCI Coordination of Response

To provide adequate medical care for those affected, an MCI response should be a coordinated effort inclusive of the existing community healthcare system partners. An integrated systems approach to preparing for mass casualties may enhance the

response of all hospitals in a community to achieve a common mission – providing care to the highest number of casualties with the resources available.

Effective response includes minimizing duplication of effort and response activities, ensuring coordination among federal, state, local, and tribal planning, preparedness, response, and recovery activities. Planning should be consistent with:

- National Response Framework (NRF)

- National Incident Management System (NIMS)

- National Security Strategy

- Presidential Policy Directive (PPD-8) on National Preparedness

- State and Local plans

Developing health care coalitions may help coordinate local, regional, and statewide response. A health care coalition *may* consist of any of the referenced community healthcare system partners previously identified. Coalitions may be different in structure, function and partners from one region to another.

Coalitions and partnerships may formalize partner involvement through regular attendance at meetings, establishment of mutual aid agreements, by-laws, etc. Non-formalized partnerships are encouraged for purposes of exchange of services, resource sharing, and other forms of assistance that benefit the state, regional or local program, the health care coalition, or the individual health care organization.

The U.S. Department of Health and Human Services, Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large Scale Emergencies and Medical Surge Capacity and Capability: The Health care Coalition in Emergency Response and Recovery are also good reference tools for coalition development and planning for a coordinated response.

Hospital MCI Planning Assumptions

Hospitals have a comprehensive plan that addresses mitigation, preparedness, response, and recovery activities for major health and medical events. Including MCI information as part of the base plan is good practice.

General MCI planning assumptions may include:

- Planning improves response interactions between federal, state, and local agencies.

- Plans are likely to change based on an incident.

- Hospitals and community healthcare system partners may or may not be affected by the incident.

- Input and leadership from public health and medical providers enhances incident management.

- Health care organizations benefit from broad support to provide medical surge capability and capacity.

- Training efforts are based on established, defined response systems.

- Florida's health care system maintains excellent baseline capabilities.

- There are finite limits to medical surge capability and capacity.

Operational MCI planning assumptions may include:

- Staff and responders may or may not follow the plan.

- Notification of an MCI may come from casualties who self-transport to a hospital or from media.

- Initial reports from a scene may over-exaggerate the number of casualties.

- Persons who are injured in an MCI may not wait for Emergency Medical Service (EMS) to triage and transport them; instead, they may seek care at hospitals closest to the scene or may bypass the closest ones to travel to those already familiar to them. The end result may be that some hospitals, especially those closest to the incident, may receive a disproportionate share of casualties.

- Less seriously injured casualties who self-transport to the hospital typically arrive before those who are more seriously injured. Self-transported, less injured casualties may not wait at an overcrowded hospital and may transport again to a different hospital.

- Casualities may go to an ancillary area or non-hospital facility instead of the traditional emergency department if they see a hospital logo on a building.

- Casualties may arrive at hospitals without having been triaged, decontaminated or receiving first aid.

- Emergency responders may arrive to help, whether requested or not.

- Resource sufficiency may exist, however there may be a mobilization and logistics issue for them to be available in a timely manner.

- Patients with casualties may report with special medical or functional needs.

- Language barriers may exist.

- Persons who are ill or injured in an MCI and live are not victims, but instead should be referred to as survivors.

- Patients needing decontamination may not have been de-contaminated at the scene.

- Hospitals may not be able to care for all patients.

- Hospitals may need to be evacuated.

Situational Awareness

Hospitals can maintain situational awareness of threats through access and participation in multiple systems. Maintaining awareness may help to anticipate potential threats, provide early notification of outbreaks, advance mitigation strategies for known vulnerabilities, and increase the time to prepare the organization for actual incidents.

Awareness may be enhanced through situational awareness activities such as:

- Hazard Vulnerability Analysis (HVA), risk assessments of the hospital facility and campus buildings that are part of the hospital's system of care.

- Technology and System Alerts (Health Alert Network or HAN).

- Florida Department of Health Emergency Notification System (FDENS).

- Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE).

- Homeland Security Information Network (HSIN).

- National Terrorism Advisory System (NTAS).

- Weather alerts, and local emergency partner notifications.

Communication

Communication is essential during an MCI to convey data and information which supports situational awareness to hospitals and response personnel. Emphasis on sustaining internal and external communication with community partners (EMS, emergency management, public health, law enforcement, other response partners, and the public) supports consistent messaging and information dissemination during, and immediately following, an MCI.

Methods to support communications include:

- Traditional and redundant interoperable communications.

- Mass notification systems to provide alerts and updates.

- Computer operated, internet-based incident management programs.

- Emergency reporting systems:

    a. Bed availability reporting.

    b. Status of facility infrastructure and impact severity.

- Conference calls and or video conferencing with local and state partners.

- Coordination of press releases with local Joint Information Center.

- Amateur Radio Emergency Service® (ARES).

- Social media systems.

Triage

Triage is the term used to describe the process of sorting out casualties and prioritizing care. Historically, triage has been used within multiple military conflicts. Civilian emergency medical services and hospital emergency departments who use the process show increased evidence of improved outcomes. Decreasing time to treat those in need of immediate care has been shown to increase survival rates.

Simple Triage and Rapid Treatment (START) and JumpSTART (pediatric version) are triage methods considered the standard for use in MCI's in Florida. The color coding technique used in the methods are easy to use and teach to others. A disaster color coding process (Table 1) including tags or ribbons is used as a quick method to sort out acuity levels of casualties.

Table 1 -

Color	Acuity	Need for Treatment	Comments
RED	Emergent	Immediate	Threat to life, limb, or organ
YELLOW	Urgent	Delayed	Significant injury or illness but can tolerate a delay in care
GREEN	Non-Urgent	Minimal / Non-urgent	Can safely wait for treatment
BLACK	Expired or Expected	No treatment; Expectant: Treat if resources are available	Consider transport and care for expectant patients after initial "Reds" are cleared, if resources exist and it does not delay care for Yellows. FEMORS offers guidelines on palliative care.

The triage process may be used for both injured and ill patients. Acuity levels may change in three ways for patients from the initial assigned level, during their reassessments, and through the care process:

- Improvement in status

- Decline in status

- Stable status

START and JumpSTART are considered to be the standard triage methods in Florida and used by pre-hospital EMS and disaster volunteers. They are also appropriate for use by hospitals with a large group of patient arrivals as a tool to quickly identify those in most need of immediate care.

- The START system was developed in 1983 as a collaborative tool by Hoag Hospital and the Newport Beach, California Fire Department. It has been adopted by EMS agencies across the U.S. and used in major disasters such as the 1989 Northridge Earthquake, the 1992 and 2001 World Trade Center attacks, and the 1995 Oklahoma City bombing.

- JumpSTART was developed in 1995 by Dr. Romig at Miami Children's Hospital in Miami, Florida. An objective method was needed to help triage staff make rapid decisions based on pediatric physiology rather than emotions, and to triage as appropriately as possible.

Goal: To quickly identify the red casualties among the total injured group. To accomplish this:

- All ambulatory casualties are moved away from the rest of the injured and are given a green (minor care) designation. This process removes the largest group in most disasters and makes it much easier to identify the more severely injured patients. Stating a simple phrase like "If you can hear the sound of my voice, come over here (point to the location)". A bullhorn or other voice amplification device, and gestures to point to those who are ambulatory may help to guide them toward a staging area. Gestures may be helpful for persons who have suffered auditory barotrauma (hearing impairment)..

- A rapid screening of each remaining person on the scene may be conducted with less than 1 minute spent per casualty. The parameters used for screening include: Respiratory status (R), Perfusion (P), and Mental status (M).

  - Only the simplest of interventions are given, such as opening an airway or directing a bystander to apply direct pressure to external bleeding. The START system is appropriate for the physiology of persons over the age of 8 years old.

- Florida triage tags or color-coded ribbons are used as a visual method to sort casualties on scene or at treatment locations.

Reassessment helps direct resources to those who would benefit the most. For example, persons who have no medical needs but are psychological casualties may be directed to a support center for care instead of an emergency department. A primary goal of triage is to decongest emergency departments allowing them to care for the highest acuity level patients. Triage methods assist responders in identifying alternate care sites for green-tagged persons who are in need of minor treatment and likely to be ambulatory.

Reassessment conducted periodically after the initial sorting may validate that an appropriate triage level is identified. Reassessment also attempts to avoid under-triaging (assigning a less serious acuity which could lead to a higher potential risk of mortality or disability) or over-triaging (assigning a higher acuity level which could lead to patients using treatment space that others need).

START and JumpSTART methodologies are referenced in the Florida Incident Field Operations Guide (FOG). The FOG provides guidance for a pre-hospital response and hospital notifications for varied MCI levels.

Casualty Planning

Estimation of Casualty Numbers

The CDC has developed a Mass Casualty Predictor model that uses the number of casualties arriving in the first hour to estimate the total anticipated number. The one hour window begins when the first casualty arrives, not from the time of the event. The actual number may be dependent on transportation availability, security issues, secondary events, and other factors.

Hospital Surge Models may help to estimate the resources needed to support various MCI scenarios including:

- Biological (anthrax, smallpox, flu, or pneumonic plague, etc.)

- Chemical (chlorine, sulfur mustard, sarin, etc.)

- Conventional (improvised explosive device, etc.)

- Foodborne (botulinum neurotoxin, etc.)

- Nuclear or radiological (1KT or 10KT explosion, etc.)

The "dual wave phenomenon" has been used to describe how casualties tend to arrive at hospitals. In no-notice events, patient flow starts suddenly, sometimes without warning, and builds rapidly.

- The first wave of casualties may include those who only require minor care. They are not in need of extrication and are able to walk; therefore they may appear within the first 15 to 30 minutes depending on the distance from the scene to the closest hospitals.

- The second wave may include those who require EMS transport and may include those in emergent need of immediate care. The delay in arrival of those who are more seriously injured is due to a number of factors including the need for non-ambulatory transport methods and the need for search and rescue to locate those who are unresponsive and who may require extrication.

Total Expected Casualties = # of casualties arriving in one hour window x 2

Approximately 50% of acute casualties may arrive at the closest medical facilities within 60 minutes. 50-80% may arrive within 90 minutes. Most arrive within 1-4 hours.

Casualty arrivals differ with a biological outbreak. These arrivals tend to be insidious, beginning slowly but then growing exponentially within hours to days. Recognition that there are persons arriving with similar symptoms or coming from the same location is essential to taking action to accommodate the surge. Reporting data for biological outbreaks into a syndromic surveillance system assists hospitals and county health departments in monitoring trends in a number of disease syndrome categories, enhances the detection of disease outbreaks, and improves situational awareness. Reporting data may enable a timelier public health response to these events.

The Florida Department of Health (FDOH), Bureau of Epidemiology maintains a syndromic surveillance system called the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE). More information about ESSENCE is available on the Florida Department of Health, Bureau of Epidemiology Website.

 Hospitals may want to plan for a scalable staging area to support families of arriving casualties in conjunction with the Florida Emergency Mortuary Operations Response System (FEMORS). In a large MCI involving a multiple number of hospitals, local Emergency Management may need to open a joint Family Assistance Center with trained staff who can support family reunification efforts.

MCI Levels per Florida Field Operations Guide

Florida's Field Operations Guide classifies MCI's by different levels depending on the number of victims (Table 2).

Table 2 -

MCI Level	Number of Casualties
1	5 -10
2	11 - 20
3	21 - 100

4	101 - 1000
5	> 1000*

* An MCI Level 5 may also be communicated when regional resources are overwhelmed or exhausted.

It is important to understand EMS and hospital triage may differ slightly. A large level 5 mass casualty incident requires the coordinated response of at least several community healthcare system partners to provide adequate medical care for those affected.

Decontamination

Hospital emergency operation plans should include information related to decontamination and how it is going to be performed, as necessary. This may include any of the following:

- A process for communicating with and directing patients to a decontamination area(s).
- Communications protocols to be used by team members within decontamination area(s) and between other units.
- Processes for activation/de-activation of the team.
- Specific triggers and/or scenarios where decontamination would be appropriate.
- Location of primary and alternative decontamination areas.
- Set-up, designation of space and operational procedures for each space.
- Segregation and decontamination of prioritized contaminated individuals and their belongings.
- The segregation of contaminated vehicles, equipment and supplies.
- A process for human and material resource staging and demobilization/reconstitution.
- A plan for staging and rehabilitation of decontamination team staff.

These measures support proper decontamination procedures and processes which helps to ensure everyone's (patient and staff member) safety is taken seriously.

Anticipation of Casualty Acuity Levels

Hospital planning has traditionally anticipated the number of casualties to be treated as potentially up to 20% of the total licensed bed capacity of the hospital. This number does not necessarily indicate an increase of in-patient admissions and hospitals should determine what is a realistic number based on surge capability and capacity (staff, space, and equipment and supplies).

Clinical treatment for casualties may be provided in a traditional or non-traditional area. Hospital planning should include information detailing how a surge of patients is going to be accommodated. An MCI may result in both higher and lower numbers of patient

arrivals, varied acuity levels and varying pediatric casualties, depending on the type of disaster scenario.

Pediatric Patients: 10-20% of all casualties

Planning is recommended for sufficient personnel, equipment, and supplies to manage a number of pediatric patients which may range from 10% to 20% of the total number of casualties. Pediatric patients may be managed according to severity of injuries, in the same treatment areas where they are normally managed on a daily basis.

Table 3 contains planning considerations for mass casualty incidents which highlight casualty acuity levels across adult and pediatric populations and addresses key issues related to treatment space, staffing and supplies.

Table 3 - PLANNING CONSIDERATIONS FOR MCI

Casualty Acuity Level for All Populations	Arrival Time	Space	Staffing	Supplies

Red tagged (Emergent or Severe Injuries): 20% of total number of casualties
 	
• Need immediate medical or surgical attention:
 	
  o Includes patients presenting with an acute airway, breathing, circulatory or neurological problem requiring immediate surgical intervention and/or admission to an ICU
 	
  o All patients admitted with endotracheal intubation
 	
  o Critical casualties may be complex with multi-system involvement
	• Expect that 80% of casualties may be transported by EMS within 1 hour of the event
	
	• Sufficient personnel, equipment and supplies to be in place within 30 minutes of event notification
		• Concentrate treatment location within one area of the Emergency Department (ED) or Trauma Center to maximize the ability of personnel to provide resuscitative care or immediate life-saving procedures.
		
		• Need gases (oxygen, air), suction, monitors, doppler (vascular/fetal heart tones (FHT's)), ultrasonography, access for portable x-rays and proximity to a Computed Tomography (CT) machine, in addition to assessment equipment (oximetry, vital signs equipment, otoscope, ophthalmoscope).
		
		• Anticipate that red tagged casualties may need admission to a
			• ED trauma and ED critical care trained medical and nursing staff, ED paramedic technicians.
			
			• Clinical staff support needs include respiratory therapists, radiology technicians, phlebotomists, blood bank personnel, lab, behavioral health support for patients, families and staff.
			
			• Anticipate rapid staffing need for ED, operating room (OR), and ICU areas.
			
			• Pediatric response should include those trained in pediatrics (as possible) and other specialties (pediatric surgeons, pediatric intensive care unit (PICU) nurses, etc.).
				• Intubation equipment, advanced airway supplies, cervical and spinal stabilization supplies, ventilators, IV administration equipment, central line equipment, rapid infusers, blood product administration sets, chest tubes, IV pumps, suturing and wound care supplies, splinting supplies, nasogastric tubes, urinary drainage supplies.
				
				• Pharmaceutical support: Rapid Sequence Intubation (RSI) medications, IV fluids, vasopressors, parenteral analgesics, tetanus toxoid, parenteral antibiotics.
				
				• Stat laboratory and radiology tests.
				
				• Supplies may be co-

Table 3 - PLANNING CONSIDERATIONS FOR MCI

Casualty Acuity Level for All Populations	Arrival Time	Space	Staffing	Supplies
o 10% of those who are red tagged may require immediate care OR procedures Note: Red-tagged patients ideally should go to a trauma center as the risk for death of a severely injured person is 25% lower if care can be provided at a Level I trauma center. However in a large-scale high-acuity event, casualties in need of immediate care may arrive at all hospitals.		monitored bed (most likely intensive care unit (ICU); possibly telemetry once stabilized). Some may first go to the OR or postanesthesia care unit (PACU) (pending surgery). • Separate space should be designated for pediatric casualties.		located within a "Red" stocked MCI carts for 10 patients or more. • Consider the differences in pediatric supplies and pharmaceutical support.
Yellow tagged (Urgent or Moderate Injuries): 30% • Care may be delayed until severe patients are initially managed and resuscitated or until additional health care personnel are	• Anticipate transport of 50% by EMS within 1 hour of event. • Sufficient personnel, equipment and supplies to be in place within 60-90 minutes of event notification.	• Manage these patients within the ED, provide quick evaluations and interventions (such as splinting of fractures) and then move those requiring admission to other hospital areas. • Anticipate need for	• Nursing, clinical technicians, respiratory therapists, radiology technicians, phlebotomists, behavioral health.	• Oxygen delivery supplies, IV administration equipment, IV pumps, splinting materials, suturing and wound care supplies, nasogastric tubes, and urinary drainage

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Table 3 - PLANNING CONSIDERATIONS FOR MCI

Casualty Acuity Level for All Populations	Arrival Time	Space	Staffing	Supplies
recruited. • May include children eight years of age or younger who lack an accompanying caretaker, those with special needs and all patients five years old or younger who are with a caretaker. • Do not classify children as stable by visual inspection alone; children require more detailed histories and physical examinations.		oxygen, electrocardiogram (EKG)monitors and/or oximetry, suction, assessment equipment. • Anticipate that yellow-tagged casualties may need admission to telemetry or a medical-surgical unit; some may be able to be discharged to home or to shelters. • Separate space should be designated for pediatrics.		supplies. • Consider co-locating surge supplies in a "Yellow" MCI Cart. • Likely need laboratory, radiology and possible EKG testing. • Pharmaceutical support: parenteral and oral pain medications, intervenous (IV) fluids, tetanus toxoid, antibiotics. • Consider the differences in pediatric supplies and pharmaceutical support.
Green tagged (Minor Injuries): 50% • Care may be delayed until the red and yellow tagged patients are	• 20% of these patients may be anticipated to be transported by EMS within 1 hour of the event; • Sufficient personnel,	• Depending on the size of the event, care may be managed within the ED clinic or outpatient ambulatory care or clinics, or an alternate	• ED clinic staff, ambulatory care nurses, technicians. • Behavioral health support for patients,	• Oxygen delivery supplies (cannulas, nebulizers), suturing and wound care supplies, casting and splinting supplies,

Table 3 - PLANNING CONSIDERATIONS FOR MCI

Casualty Acuity Level for All Populations	Arrival Time	Space	Staffing	Supplies
initially managed. • The majority of casualties who arrive alive at hospitals survive. 50-75% may be treated and released.	equipment and supplies to be in place within 120 minutes of event notification.	care site (ACS). • Anticipate potential need for oxygen (wall or tanks), assessment equipment. • Green-tagged casualties may be discharged to home or to shelters.	families and staff.	crutches, slings, other DME. • Consider co-locating surge supplies in "Green" MCI Carts. • Pharmaceutical support: oral pain medications, oral and topical antibiotics, tetanus toxoid. • Consider the differences in pediatric supplies and pharmaceutical support.
Black-Tagged (Expectant) • Care and comfort measures may be offered to those with an expectant status, if there are available resources.	NA	• Plan for separate respectful space for such casualties. • Provide reunification with family members if possible. • Anticipate oxygen use (wall oxygen or tanks), lighting control and bedside chairs for family members.	• Medical and nursing specialists in end-of-life care and pain (example, oncology, hospice). • Behavioral health support including faith community to offer support to both the dying and their families and staff.	• Oxygen cannulas or masks, boxes of tissues, IV start kits, human remains pouches, belonging/valuables bags. • Pharmaceuticals: parenteral analgesic and anti-anxiety medications. • Consider the differences in pediatric supplies and pharmaceutical support.

Anticipated Injuries per MCI Scenario Types

Anticipated staffing, supplies and space needs may be predicted with the type of event that occurs. Table 4 provides some information that may be a helpful tool accompanying a hazard vulnerability assessment.

Table 4 Planning Considerations for Staff based on type of MCI

MCI Category	Blunt Trauma	Penetrating Trauma	Burns	Crush	Exacerbation of Chronic Disease	Gastrointestinal (GI) Illness	Respiratory Impact	Submersion Injury	Infected Wounds	Contaminated Wounds
Chemical			X				X			X
Biological					X		X			
Radiological			X							X
Nuclear	X	X	X	X	X	X			X	X
Explosive	X	X	X	X			X		X	X
Tornadoes	X	X		X					X	
Hurricanes	X	X			X	X	X	X	X	
Flooding	X	X					X	X	X	X
Earthquake	X	X	X	X	X	X	X		X	
Wildfire			X				X			
Plane Crash	X	X	X				X			
Bus Crash	X	X		X						
Motor Vehicle Collision (MVC) Pileup	X	X	X	X						
Mass Shooting	X	X								

Staffing Considerations

Personnel who are typically needed for the initial response to an MCI include those who work as team members within the ED, OR and ICU's. Depending on the agent involved in an MCI, there are also specialists that may be needed as Subject Matter Experts (SME's). It is recommended that pediatric and obstetrical specialists be available for every incident in the event that children or pregnant women are among the ill or injured.

Hospitals are increasingly dependent on hospitalists and intensivists. They support a response by clearing patients from ICU's, discharging patients to home or to sub-acute levels of care and admitting incoming casualties.

A team approach is clearly needed to provide patient care; however, there are disciplines such as nursing, physicians and those that provide clinical support that are critical for a response to a MCI.

Assigning Staff by Casualty Acuity Levels

The START disaster triage color-coding method used in Florida to sort patients by their acuity level may be extended to assign other clinical staff to treatment areas. Many Florida hospitals use the Start2Finish model to identify bed or treatment space, supplies and staff support for each acuity level.

Hospital Staffing by Capabilities

Clinical staff may be gathered immediately from those licensed practitioners working in non-direct care roles and/or those assigned to outpatient care areas that may experience temporary diversion of patients due to the event. Table 5 indicates how hospitals may consider pre-defining such personnel as potential MCI response staff. Off-duty staff may support surge staffing.

Table 5 – Planning considerations for considering pre-defining personnel for an MCI response

Acuity Level	Staffing Capabilities
Red	Advanced Cardiac Life Support (ACLS)/Basic Life Support (BLS), Pediatric Advanced Life Support(PALS), Trauma certification and/or ED experience; Critical Care Certification and/or experience.
Yellow	ACLS (preferred but not required); BLS; Specialty experience if needed (psych, peds, Obstetrics (OB), other)
Green	Basic Life Support (BLS); Specialty experience if needed (pediatric, obstetric, wound, orthopedic, other)

Acuity Level	Staffing Capabilities
Expectant	Experience in Hospice, Oncology, Pain Management,

- Agency or contracted traveler staff may be requested, if available.

- Hospitals may activate mutual aid agreements with other hospitals, temporary staffing agencies, etc.

- Medical Reserve Corps volunteers, who are pre-registered and credentialed, may support alternate care sites. They are requested by a hospital through their local Emergency Support Function (ESF)-8 contact.

All staff responding to a MCI should report to the Hospital's Staff Staging area to be assigned. **Staff may only work within their licensed scope of practice and should be supervised as appropriate for their disciplines.**

A sample *Hospital Staffing Request Form* can be located on the Florida Department of Health, Hospital Preparedness webpage.

Staffing Standards for Emergencies, Disasters and Catastrophes

Healthcare workforce staffing capacity may be viewed for conventional, contingency and crisis scenarios.

Conventional Capacity:

- Staffing is consistent with daily standards and includes facility accommodation for an emergency such as a major MCI that triggers the activation of the hospital's emergency operations plan.

- Staffing is limited to existing staff to provide care at a facility and may include staff whose administrative or non-clinical duties may be shifted to provide clinical care during an incident (supervisors, managers, and educators).

Contingency Capacity:

- Staffing is functionally equivalent to usual patient care practices.

- Additional staff are needed for treatment areas when demands of the incident exceed community resources.

- Treatment areas may include staff from within the institution assigned to duties they may safely perform with supervision or from outside staff imported to meet clinical demands. For example, a floor nurse may provide basic nursing care for burn patients while non-clinical or untrained personnel provide non-critical care.

Crisis Capacity:

- Staffing is only available for sufficiency of care associated with a catastrophic event.

- Staffing may include those assigned to perform clinical care that is outside the scope of their usual responsibilities or training.

Functional Categories of Acute Care Personnel

Licensed practitioners may be grouped into major functional categories. An "extender" group within each category may be considered for MCI staffing support. The major functional groups include:

- Nursing

- Physicians

- Clinical Support Staff

- Social Services

- Mental Health Staff

Extenders to each functional group include those requiring supervision from one of the licensed categories (Table 6). Extenders may also include students from each of the professional groups. **Staff may only work within their licensed scope of practice and should be supervised as appropriate for their disciplines.**

Table 6

Functional Group	Licensees	Extenders
Nursing	Registered Nurse (RN); Advanced Registered Nurse Practitioner (ARNP); ARNP/Clinical Nurse Specialist (CNS); CNS; Certified Nurse-Midwife (CNM)	Licensed Practical Nurse (LPN); EMT; Emergency Medical Technician Paramedic (EMT-P); Certified Nurses Aide (CNA); Students: RN; ARNP; CNA/Patient Care Technician (PCT)

Functional Group	Licensees	Extenders
Physicians	Medical Doctor (MD); Doctor of Osteopathy (DO); Doctor of Preventive Medicine (DPM)	Doctor of Dental Surgery (DDS); Doctor of Veterinary Medicine (DVM); Physicians Assistant (PA); ARNP Students: DDS; DO; DPM; DVM
Clinical Support	Respiratory: Registered Respiratory Therapist (RRT); Respiratory Care Practitioner (RCP) Pharmacy: Registered Pharmacist (RPh) Radiology Lab: Medical Laboratory Technician (MLT) Rehab: Registered Physical Therapist (RPT); Occupational Therapist, Registered (OTR)	Respiratory: Certified Respiratory Therapist (CRT) Pharmacy: Techs Radiology: Radiologic Technologist (RT) Lab: Medical Technologist (MT) Rehab: Physical Therapy Assistant (PTA); Occupational Therapy Assistant (OTA) Students: Respiratory; Pharmacy; Radiology; Lab; Physical Therapy; Occupational Therapy; Speech Therapy
Social Services	Licensed Social Worker (LSW)	Social & Human Services Assistant; Social & Community Service Manager; Human Services Technician; Child Care Worker; Pastoral Care Students: Social Work
Mental Health	Psychiatrist; Psychologist	Psychiatric Technician; Mental Health Counselor

Types of Medical and Nursing Staffing Needed per MCI Type

Depending on the scenario and category of MCI, different specialties of medical and nursing staff may need to be included in the emergency operations plan. Table 7 provides a guide of the different types of physician and/or nursing staff.

Table 7

MCI Category / Scenario	Trauma Surgeon	General Surgeon	Orthopedic Surgeon	Neurologic Surgeon	Plastic Surgeon	Thor Surgeon	Vascular Surgeon	Internal Medicine	Pulmonary	Infectious Disease	Pediatric	OB -GYN	Hem - Oncology	Radiation Oncology	Behavioral Health
Chemical								X			X	X			X
Bio								X	X	X	X	X			X
Radiologic								X			X	X	X	X	X
Nuclear	X	X						X			X	X	X	X	X
Explosive	X	X	X	X	X	X	X	X	X		X	X			X
Tornado	X	X	X	X	X		X	X	X		X	X			X
Hurricane								X			X	X			X
Flooding								X			X	X			X
Earthquake	X	X	X	X	X	X	X	X			X	X			X
Wildfire		X			X			X			X	X			X
Transportation Crash	X	X	X	X	X	X	X	X	X		X	X			X

Surgical Planning

- Typically, only 10% of the red tagged emergent casualties from a conventional MCI require stat, emergency, life-saving (resuscitative) surgery.

- A significant number of casualties may require one or more surgical interventions during their hospital stay. Hospitals may consider bundling procedures per casualty to reduce anesthesia time, increase OR availability, and shorten the recovery process for patients. This coordinated approach to surgical care has been used by the military and may be called "parallel operating".

- The approximate number and type of operations expected to be performed may include:

  o Life saving operations (hemorrhage control, craniotomy): 10% of red casualties.

  o Open fractures:10% of all casualties.

  o Penetrating eye injuries: 5% of all casualties.

  o Neurological surgery (urgent):10% of all casualties.

  o Chest surgery: 5% of all casualties.

  o Oral/maxillary/facial surgery: 5-10% of all casualties.

  o Burns: 5-10% of all casualties.

Casualty Acuity Level Distribution Planning

Table 8 demonstrates what a 20% surge might look like for varied hospital bed sizes and offers a perspective on the number of casualties per acuity level that may be anticipated.

The initial goal is to provide immediate care to those who are red tagged and need life-saving interventions. With proper planning, it is possible to accomplish this with available resources for even smaller hospitals with a 20% patient surge. Access an interactive table by clicking here.

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Table 8

Hospital Licensed Bed Size	All MCI Casualties (20% bed size)	20% Pediatric Casualties		Red (20%)	Operating Room (10%)	Yellow (30%)	Green (50%)
100	20	4		4	0	6	10
200	40	8		8	1	12	20
300	60	12		12	1	18	30
400	80	16		16	2	24	40
500	100	20		20	2	30	50
600	120	24		24	2	36	60

Hospitals are expected to be able to increase staffing levels, rapidly assess bed availability, open occupied beds in priority areas and work cooperatively with local ESF-8 to direct minor-care casualties to an alternate care site, as needed.

Anticipation of Blood Transfusion Needs

The need for blood products is often overestimated. The resurgent use of tourniquets and newer products such as bandages with hemostatic properties may be able to control blood loss. Consultation with the hospital laboratory, local blood bank and materials management may identify the availability of blood, blood products and other supplies improving patient outcomes.

Emergency operating plans may want to consider including the level of blood supply needed based on current information related to appropriate transfusion criteria, blood availability and other measures that conserve blood or prevent blood loss.

Hospital Mass Fatality Management

In a typical MCI, most of the fatalities occur on scene. A need for surge space may occur due to expectant patients receiving palliative care and for patients who die from injury or illness at the hospital. Hospitals should determine appropriate plans and procedures for fatality management with local medical examiner office and county emergency management officials.

Morgue Space

Hospital morgue capacity is limited, so surge mass fatality management planning is needed. This includes identification of additional temporary space that may maintain a temperature of 38-40 degrees. Supplies may be collocated in a "black" colored MCI cart.

More information and planning resources may be found:

- Hospital Fatality Management Awareness Level Training on the Florida Department of Health, Hospital Preparedness webpage

- State of Florida, Pinellas County, Mass Casualty/ Mass Fatality Standard Operating Procedures

- Florida Emergency Mortuary Operations Response System (FEMORS), Hospital Fatality Management Planning Checklist

- FEMORS, Brochure: Handling of Disaster Victim Human Remains

Behavioral Health Support

Stress management, psychological first aid, and behavioral health support services are needed for survivors, bystanders, first responders, and hospital personnel, for every MCI event. The psychological impact of those seeking medical care may be significantly higher than those seeking medical care for physical injuries alone. A terrorist event may yield 4,500 victims requiring psychological first aid to every victim needing medical care. The term "fearful and distressed" is recommended instead of "worried well" to describe psychological casualties.

Disasters have a psychological impact on everyone at the scene of an event, family and friends, bystanders, and emergency responders. Inpatients at hospitals that receive casualties may also experience concern about their own family or friends who may be restricted from visiting them or about degradation in the level of care they are receiving if resources are taken from their units.

Medical and behavioral triage is a dynamic process and assessment that may be conducted simultaneously during multiple points of care from the scene of an event through the continuum of treatment at hospitals or other referral sites.

Psychological first aid includes identification of those exhibiting acute stress reactions with immediate needs and establishing safe areas, facilitating stress-symptom reduction, linking persons to critical resources, and connecting them to social support.

PsySTART, Psychological Simple Triage and Rapid Treatment, is a disaster mental health triage and management strategy that was developed by Dr. Merritt Schreiber from University of California, Los Angeles (UCLA) in 2008. It allows for a National Incident Management System - Incident Command System (NIMS-ICS) approach across systems to stage resources and link persons to immediate interventions and to

ESF-6 human services or other resources. A color-coding system may be applied to psychological casualties to identify those most at risk after a disaster.

Education and Exercises

Implementation of a hospital's emergency operations and management plans requires that personnel fully understand their responsibilities and roles. This may be achieved through specific instructional activities.

Education and training may be provided in a variety of formats and include web-based modules or other forms of "distance learning." Classroom training provides an opportunity for personnel from different organizations to meet each other and establish a working relationship.

Drills focus on the execution of specific skills that might be required during response. Examples of drills are:

- **Notification procedures**: Regular testing of the notification and initial confirmation procedure is important to verify that equipment is functioning, that contact lists are current, and that personnel understand the appropriate response to the notification message. This may become a routine procedure that ensures effectiveness and may include regular radio checks or sending text messages to the notification groups.

- **Resource requests**: Drills focusing on the availability of specific resources (patient beds, equipment, and supplies) may promote an understanding of the range of potentially available resources. These resource request drills may be combined with notification drills.

- **Mobilization of personnel**: Drills focusing on the mobilization of personnel may ensure that procedures are in place to rapidly activate during an incident.

Exercises help evaluate emergency plans once they have been implemented and personnel have received appropriate education and training. Exercises may evaluate specific elements of an organization's plan or evaluate the plan in a broader context. Scenario specific exercises are encouraged, such as an MCI from an explosive event or mass shooting. Such events are less common than conventional MCI's but their intensity warrants preparedness.

Common elements that may be evaluated during an exercise include standard operating procedures (SOPs), organizational structure, or the effectiveness of specific technologies used during emergency response. An important consideration in designing an exercise is that the areas to be evaluated are pre-determined and an evaluation plan is established.

The Homeland Security Exercise and Evaluation Program (HSEEP) contains minimum requirements if federal emergency preparedness funds are used to develop and conduct the exercise. HSEEP Volume III: Exercise Evaluation and Improvement Planning offers proven methodology for evaluating and documenting exercises and

implementing an Improvement Plan (IP). The FDOH Healthcare System Preparedness webpage contains additional links to exercise resources for hospitals including the Florida Department of Health HSEEP Mechanics Self Paced Training.

More information can be found in the following education and exercise resources:

- U.S. Department of Health and Human Services, Agency for Health care Research and Quality (AHRQ), Training of Hospital Staff to Respond to a Mass Casualty Incident Evidence Report #95, July 2004.

- U.S. Department of Homeland Security, Federal Emergency Management Agency, Emergency Management Institute Independent Study Program.

- Florida Department of Health, 2011 Recommended Disaster Core Competencies for Hospital Personnel.

- Florida Department of Health, University of Florida, Disaster Burn Care and Burn Center Training.

- The Joint Commission.

- U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response, Hospital Preparedness Program.

MCI Hospital Performance Measures

There are multiple time indicators that may be used to track performance during a MCI. Time to respond improves outcomes for casualties and an overall organizational response to establish an ICS structure, staffing, space and supplies. Hospitals may use these measures to track their baseline and performance improvement over time during exercises or events.

Examples of performance measures grouped in the order that they may occur is found in Appendix 1.

Additional Outcome Measures:

Expected outcomes for an MCI of any type or scale are highlighted in Table 9 and include:

- Rapid identification of those in need of immediate care who arrive at the hospital. This may be reflected in the critical mortality rate i.e., the percentage of those who die compared with the number of casualties for the hospital.

- Rapid processing for a large number of casualties through the hospital's system of care.

Table 9

Performance Indicators	Numerator	Denominator	Result
Overall regional healthcare system mortality rate	Number of Overall Casualties Transported from Scene	Number of Casualties who died in Hospitals (does not include those dead on arrival (DOA's)	
Enter data →			
Critical Mortality Rate	Deaths in those with an Injury Severity Scale (ISS)>/= 15	Total of those with an ISS >/= 15	
Enter data →			
Undertriage Rate	Total of those who were not red-tagged	Total of those with ISS >/= 15	
Enter data →			

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Terminology – Mass Casualty Incident Hospital Planning

Unless otherwise noted, terminology in this section comes from the U.S. Department of Health and Human Services, [Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large Scale Emergencies](); [Medical Surge Capacity and Capability: The Healthcare Coalition in Emergency Response and Recovery;]() and [Mass Casualty and Mass Effect Incidents: Implications for Health care Organizations]()

Community Healthcare System Partners: Combines public and/or private community health and medical partners to include: public health; hospitals and other healthcare providers; emergency medical service providers; long-term care providers; mental/behavioral health providers; private entities associated with healthcare (hospital associations, etc); specialty service providers (dialysis, pediatrics, woman's health, stand alone surgery, acute/urgent care, etc.); support service providers (laboratories, pharmacies, blood banks, poison control, etc.); primary care providers; community health centers; tribal healthcare; and, federal entities (National Disaster Medical System (NDMS), Veterans Administration (VA) hospitals, Department of Defense (DoD) facilities, etc.).

Disaster ("Major"): As defined in the Robert T. Stafford Act, a "major disaster" is any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under this Act to supplement the efforts and available resources of States, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.

Emergency (Federal): As defined in the Robert T. Stafford Act, any occasion or instance for which, in the determination of the President, federal assistance is needed to supplement state and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States.

Emergency Management: Describes the science of managing complex systems and multidisciplinary personnel to address emergencies or disasters, across all hazards, and through the phases of mitigation, preparedness, response, and recovery.

Emergency Operations Center (EOC): The physical location from which the coordination of information and resources to support domestic incident management activities normally takes place. The use of EOCs is a standard practice in emergency management and is one type of Multiagency Coordination Center (MACC). The EOC is used in varying ways at all levels of government and within private industry to provide coordination, direction, control or support during emergencies.

Emergency Operations Plan (EOP): The "response" plan that an entity (organization, jurisdiction, State, etc.) maintains for responding to any hazard event. It provides action guidance for management and emergency response personnel during the response phase of Comprehensive Emergency Management.

Emergency Support Function (ESF): As defined in the National Response Framework, an ESF refers to a group of capabilities of federal departments and agencies to provide the support, resources, program implementation, and services that are most likely to be needed to save lives, protect property, restore essential services and critical infrastructure, and help victims return to normal following a national incident. An ESF represents the primary operational level mechanism to orchestrate activities to provide assistance to state, tribal, or local governments, or to federal departments or agencies conducting missions of primary federal responsibility.

First Responder: Refers to individuals who in the early stages of an incident are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers as defined in Section 2 of the Homeland Security Act of 2002 (6 U.S.C. 101). It includes emergency management, public health, clinical care, public works, and other skilled support personnel (equipment operators) that provide immediate support services during prevention, response, and recovery operations.

Hazard: A potential or actual force, physical condition, or agent with the ability to cause human injury, illness, and/or death, and significant damage to property, the environment, critical infrastructure, agriculture and business operations, and other types of harm or loss.

Hazard Vulnerability Analysis (HVA): A systematic approach to identifying all hazards that may affect an organization. Assess the risk (probability of hazard occurrence and the consequence for the organization) associated with each hazard and analyze findings to create a prioritized comparison of hazard vulnerabilities. The consequence, or vulnerability, is related to both the impact on organizational function and the likely service demands created by hazard impact.

HealthCare Coalition: A group of individual health care organizations in a specified geographic area that agree to work together to enhance their response to emergencies or disasters. The HealthCare Coalition, being composed of relatively independent organizations that voluntarily coordinate their response, does not conduct command or control. Instead, the Coalition operates consistent with Multiagency Coordination System (MAC System) principles to support and facilitate the response of its participating organizations.

HealthCare Coalition Notification Center (or Coalition Notification Center): The entity that provides notification services for the Coalition. Requirements include 24/7 staffing and appropriate technologies to support the notification activities. The Coalition Notification Center remains operational during incident operations and is folded under the Operations Section.

Homeland Security Presidential Directive-5 (HSPD-5): A Presidential directive issued on February 28, 2003, and intended to enhance the ability of the United States to manage domestic incidents by establishing a single, comprehensive National Incident Management System.

Incident: An actual or impending hazard impact, either human caused or by natural phenomena, that requires action by emergency personnel to prevent or minimize loss of life or damage to property and/or natural resources.

Incident Action Plan (IAP): The document in ICS that guides the response for that operational period. It contains the overall incident objectives and strategy, general tactical actions and supporting information to enable successful completion of objectives. The IAP may be oral or written. When written, the IAP may have a number of supportive plans and information as attachments (traffic plan, safety plan, communications plan and maps). There is only one IAP at an incident. All other "action plans" are subsets of the IAP and their titles should be qualified accordingly. For example, the jurisdiction primarily impacted usually develops the IAP. Action plans developed below the level of the jurisdiction could be referred to as "Operations Plans" (Summary Hospital Operations Plans or Individual Hospital Operations Plans).

Incident Command System (ICS): The combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources for emergency incidents. It may be used for all emergencies, and has been successfully employed by multiple response disciplines. ICS is used at all levels of government (local, State, Tribal, and Federal) to organize field level operations. (Adapted from NIMS)

Joint Information Center (JIC): A center established to coordinate the public information activities for a large incident. It is the central point of contact for all news media at the scene of the incident. Public information officials from all participating Federal agencies collaborate at the JIC, as well as public information officials from participating State and local agencies. (Adapted from NIMS)

Mass Casualty Incident: An incident that generates a sufficiently large number of casualties whereby the available health care resources, or their management systems, are severely challenged or unable to meet the health care needs of the affected population.

Mass Effect Incident: An incident that primarily affects the ability of an organization to continue its normal operations. For health care organizations, this can disrupt the delivery of routine health care services and hinder their ability to provide needed surge capacity. For example, a hospital's ability to provide medical care to the victims of an earthquake is compromised if it must focus on relocating current patients because a section of the facility was destroyed.

Memorandum of Agreement (MOA): A Memorandum of Agreement (MOA) defines the general area of conditional agreement between two or more parties, but one party's action depends on the other party's action. The MOA can be complemented with

support agreements that detail reimbursement schedules and specific terms and conditions. (Adapted from FEMA's National Preparedness Directorate, Memorandum of Agreement/Memorandum of Understanding Template and Guidance; March 2009)

Memorandum of Understanding (MOU): A formal document embodying the firm commitment of two or more parties to an undertaking, and setting out its general principles, but falling short of constituting a detailed contract or agreement. (Oxford Dictionary of Law, 2006)

Mitigation: Activities designed to reduce or eliminate risks to persons or property or to lessen the actual or potential effects or consequences of a hazard. Mitigation involves ongoing actions to reduce exposure to, probability of, or potential loss from hazards. Examples include zoning and building codes, floodplain buyouts, and analysis of hazard-related data to determine where it is safe to build or locate temporary facilities. Mitigation can include efforts to educate governments, businesses and the public on measures they can take to reduce loss and injury. (Adapted from NIMS)

Mobilization: Activities and procedures carried out that ready an asset to perform incident operations according to the Emergency Operations Plan. During the response phase of Comprehensive Emergency Management, it is the stage that transitions functional elements from a state of inactivity or normal operations to their designated response state. This activity may occur well into the response phase, as additional assets are brought on line or as surge processes are instituted to meet demands.

Multijurisdictional Incident: An incident that extends across political boundaries and/or response disciplines, requiring action from multiple governments and agencies to manage certain aspects of an incident. These incidents may best be managed under Unified Command. (Adapted from NIMS)

Mutual Aid Agreement: Written instrument between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel, equipment, supplies, and/or expertise in a specified manner. An "agreement" is generally more legally binding than an "understanding."

National Incident Management System (NIMS): A system mandated by HSPD-5 that provides a consistent nationwide approach for Federal, State, Tribal, and local governments, the private sector, and nongovernmental organizations to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, and local capabilities, NIMS includes a core set of concepts, principles, and terminology. HSPD-5 identifies these as the Incident Command System; multiagency coordination systems; unified command; training; identification and management of resources (including systems for classifying types of resources); qualifications and certifications; and the collection, tracking, and reporting of incident information and incident resources. (Adapted from NIMS)

National Response Framework (NRF): A guide to how the Nation conducts all-hazards response – from the smallest incident to the largest catastrophe. This key

document establishes a comprehensive, national, all-hazards approach to domestic incident response. The *Framework* identifies the key response principles, roles and structures that organize national response. It describes how communities, States, the Federal Government and private-sector and nongovernmental partners apply these principles for a coordinated, effective national response. And, it describes special circumstances where the Federal Government exercises a larger role, including incidents where Federal interests are involved and catastrophic incidents where a State would require significant support. It allows first responders, decision-makers and supporting entities to provide a unified national response.

Planning (incident response): Activities that support the incident management process, including completing the incident action plan and support plans and accomplishing incident information processing. This is in contrast to preparedness planning, which is designed to ready a system for response.

Preparedness: The range of deliberate, critical tasks and activities necessary to build, sustain, and improve the capability to protect against, respond to, and recover from hazard impacts. Preparedness is a continuous process. Within NIMS, preparedness involves efforts at all levels of government and the private sector to identify threats, to determine vulnerabilities, and to identify required response plans and resources. NIMS preparedness focuses on establishing guidelines, protocols, and standards for planning, training and exercise, personnel qualifications and certification, equipment certification, and publication management. (Adapted from NIMS)

Preparedness Organization: An organization that provides coordination for emergency management and incident response activities before a potential incident. These organizations range from groups of individuals to small committees to large standing organizations that represent a wide variety of committees, planning groups, and other organizations (Citizen Corps, Local Emergency Planning Committees, and Critical Infrastructure Sector Coordinating Councils). (NIMS)

Prevention: Actions to avoid a hazard occurrence, or to avoid or minimize the hazard impact (consequences) if it does occur. Prevention involves actions to protect lives and property. Under HSPD-5, it involves applying intelligence and other information to a range of activities that may include such countermeasures as deterrence operations; heightened inspections; improved surveillance and security operations; investigations to determine the full nature and source of the threat; public health and agricultural surveillance and testing processes; immunizations, isolation, or quarantine; and as appropriate specific law enforcement operations aimed at deterring, preempting, interdicting, or disrupting illegal activity, and apprehending potential perpetrators and bringing them to justice. (Adapted from NIMS)

Public Health Emergency: Defined by the Model State Emergency Health Powers Act (MSEHPA): An occurrence or imminent threat of an illness or health condition that is believed to be caused by: (1) bioterrorism; (2) the appearance of a novel or previously controlled or eradicated infectious agent or biological toxin; (3) a natural disaster; (4) a chemical attack or accidental release; or (5) a nuclear attack or accident. It must pose a high probability of a large number of deaths in the affected population, or a large

number of serious or long-term disabilities in the affected population, or widespread exposure to an infectious or toxic agent that poses a significant risk of substantial future harm to a large number of people in the affected population. (The Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities)

Public Information Officer: Official at headquarters or in the field responsible for preparing and coordinating the dissemination of public information in cooperation with other responding Federal, State, Tribal, and local agencies. In ICS, the term refers to a member of the Command Staff responsible for interfacing with the public and media and the Joint Information Center.

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

Resiliency: The ability of an individual or organization to quickly recover from change or misfortune.

Resources: All personnel and major items of equipment, supplies, and facilities available, or potentially available, for assignment to incident or event tasks on which status is maintained.

Response: Activities that address the direct effects of an incident. Response includes immediate actions to save lives, protect property, and meet basic human needs. Response also includes the execution of emergency operations plans as well as activities designed to limit the loss of life, personal injury, property damage, and other unfavorable outcomes. As indicated by the situation, response activities may include applying intelligence and other information to lessen the effects or consequences of an incident; increased security operations; continuing investigations into nature and source of the threat; ongoing public health and agricultural surveillance and testing processes; immunizations, isolation, or quarantine; and specific law enforcement operations aimed at preempting, interdicting, or disrupting illegal activity, and apprehending actual perpetrators and bringing them to justice. (Adapted from NIMS)

Response Organization: A response organization provides a structure and functions to manage emergency decision-making, decision implementation, and overarching coordination of resources and actions in the emergency context. Response organizations can include entities that conduct response management for a larger organization (private and for-profit or not-for profit), an agency or department, a government jurisdiction, or a collection of like organizations such as a Health care Coalition or a regional response center. Most response organizations are organized under NIMS as an Incident Management Team or as a Multiagency Coordination System. (ICDRM/GWU Emergency Management Glossary of Terms).

Surge Capability: The ability to manage patients requiring *unusual* or very *specialized* medical evaluation and care. Requirements span the range of specialized medical and public health services (expertise, information, procedures, equipment, or personnel) that

are not normally available at the location where they are needed. It also includes patient problems that require special intervention to protect medical providers, other patients, and the integrity of the health care organization.

Surge Capacity: The ability to evaluate and care for a markedly increased volume of patients—one that challenges or exceeds normal operating capacity. Requirements may extend beyond direct patient care to include other medical tasks, such as extensive laboratory studies or epidemiologic investigations.

Appendix 1 – Performance Measures

Priority Issues	Performance Indicator	Evaluation Method	Result
Communications			
Internal communications	Early notification of an MCI (EMS, other)	Time in minutes from MCI incident to hospital notification	
	Notification of Incident Command team	Time from hospital notification to Incident Command Team notification	
	Opening of Hospital Command Center	Time from Incident Command Team notification to Command positions present	
External communications	Notification of Emergency Response Team	Time from hospital notification to Emergency Response Team notification	
	Notification of on-duty staff	Time from hospital notification to hospital MCI code overhead page	

Priority Issues	Performance Indicator	Evaluation Method	Result
	Notification of off-site on-duty staff	Time from hospital notification to notification to off-site on-duty staff	
	Notification of Medical Staff & Licensed Independent Practitioners (LIP's)	Time from hospital notification to notification of Medical Staff	
	Notification of Incident Command Team SME's	Time of Incident Command Team notification to availability of SME's (Radiation Safety Officer; Infection Preventionists; Toxicologist or Hazmat expert	
	Radio distribution to response team members	Time from Incident Command Team notification to radio distribution	
Internal communications	Hospital Hotline Message Activation	Time from Incident Command Team notification to Hotline message posting	
External communications (if community MCI)	Notification of off-duty staff	Time of Incident Command team notification to notification of off-duty staff	
Family Assistance Center	Availability of rapidly staffed Family Assistance Center 24/7	Time from Hospital Notification of MCI to opening of Family Assistance Center	

Priority Issues	Performance Indicator	Evaluation Method	Result
	Notification of visitors	Time of Incident Command Team notification to notification of visitors	
	Availability of Media Staging Area	Time of Incident Command Team notification to PIO ensuring Media Staging Area is staffed and open	
External communications (if Hospital MCI)	Notification of ESF-8 or County Warning Point	Time from Incident Command Team notification of internal incident to call to ESF-8 or County Warning Point	
Patient Care			
Triage	Identify and provide life-saving interventions to immediate (red-tagged) patients	Critical mortality rate; Under triage rate	
	Identify and treat Urgent care (yellow-tagged) patients	Time to place patients to staffed treatment space	
	Availability for Minor care (green-tagged) space and staff	Time to open staffed Minor Care area	
	Availability of Expectant care space and staff	Ability to provide palliative care; reunify patients with their	

Priority Issues	Performance Indicator	Evaluation Method	Result
		families	
Registration	Available registration staff to register patients in order of acuity: Red, Yellow, Green	Time to register those in immediate need of care	
Decontamination	Mass Decon-gross and secondary; Decon of special populations	Time of contaminated casualty arrivals to decontamination	
Patient flow	Increase throughput from ED to Inpatient Areas to receive incoming casualties	Time to clear admitted patients from ED	
	Availability of Post Anesthesia Care Unit (PACU)space and staff	Time to notify readiness for first PACU case (pending OR); 2nd; 3rd; 4th; 5th	
	Availability of OR space and staff	Time to notify readiness for first MCI OR case; 2nd; 3rd; 4th; 5th	
	Availability of ICU space and staff	Time to notify readiness for first ICU admit; 2nd; 3rd; 4th; 5th	
	Discharge of admitted patients ready for transfer to alternate level of care	Time to move patients to discharge holding area:	
	Availability of fatality management surge space, staff and supplies	Time to provide staffed fatality management surge space	

Priority Issues	Performance Indicator	Evaluation Method	Result
Patient tracking	Ability to locate patients	Time to locate random sampling of casualties	
Patient Evacuation	Ability to conduct horizontal and/or vertical evacuation	Time from evacuation order to last evacuee transport	
Safety & Security			
Restrict hospital campus vehicle and pedestrian access	Perimeter control (closed fence gates; barriers; cones; tape; closed roads)	Time of hospital notification to installation or activation of perimeter controls	
Restrict hospital internal access	Electronic lockdown	Time from hospital notification to lockdown	
Surge personnel	Deputy staff; Local law enforcement	Time to position deputy staff at designated locations	
Chain of custody	Designated personnel in place	Time to position designated personnel in decontamination or treatment areas	
Weapons checks	Designated personnel in place	Time to position designated personnel in decontamination or treatment areas	
Resources			
MCI Supplies	Position MCI carts in Treatment locations (Red/Yellow/Green/Black)	Time of hospital notification to MCI carts positioned in treatment locations:	

Priority Issues	Performance Indicator	Evaluation Method	Result
		R,Y, G, B	
Mass Decon Capability	Setup Decon System(s) and Supplies	Time of hospital notification to decon system functional with water running	
Patient Transportation	Available stretchers, wheelchairs	Time to delivery of patient transportation equipment to staging area	
MCI References	Utilization of various references such as: Poison Control, DOT book, CDC website, Radiation Event Medical Management (REMM), Hazmat references, Material Safety Data Sheet (MSDS)	Demonstrate efficient use of reference materials to guide PPE choice and patient protocols	
MCI Pharmaceuticals	Provide requested countermeasures	Time from request to arrival of medications	
Surge Supplies	Respond to 20% patient surge above normal par levels	Time from request to confirming availability of top 50 patient care items	
Non-Medical Supplies	Respond to 20% patient surge above normal par levels	Time from request to confirming availability of surge linen, water, food, oxygen and fuel.	
Staff			
Surge Staff	Arrival of surge staff	Time of Incident Command notification to opening of staff	

Priority Issues	Performance Indicator	Evaluation Method	Result
		staging area & first debrief	
Decon Team	Arrival of Decon Team	Time of Hospital Overhead MCI Page or alternate notification method to Team A Decon Team in Level C PPE & Team B preparing to deploy	
Incident Command Team	Availability of key positions (IC, Command Team, Section Chiefs)	Time of Incident Command notification to Debrief of Incident Command team in Hospital Command Center	
Behavioral Health	Availability of behavioral health resource persons for staff	Time of Incident command team notification to anticipated time of arrival for behavioral health staff	
Utilities			
Power redundancy	Availability of generator backup & fuel	Demonstrated smooth transition from full power to generator backup	