Hospital Evacuation: Principles and Practices

AWR-214-W

August 2010

FEMA

Course Overview

- Developing an evacuation plan
  - Hazard vulnerability analysis, community partner integration and mitigation
- Implementing an facility's plan
  - Potential triggers, deciding to shelter-in-place or evacuate, actual evacuation, recovery

- Assessing Risks
- Developing the Plan
- Evacuating the Facility
- Recovering

LESSON ONE: Assessing Risks

Objectives

- Upon completion of this lesson, the participants will be able to identify three (3) policies or practices that can be put in place to decrease a facility's overall vulnerability.
  - Upon completion of this lesson, the participants will be able to list at least five (5) components of an effective community disaster preparedness assessment with 100% accuracy.

Hazard Vulnerability Analysis (HVA)

- Perform facility HVA
  - Identify potential hazards, threats and adverse effects
  - Use the Community Healthcare Disaster Preparedness Assessment Tool
  - Assess impact of incidents on facility
- Collaborate with community
  - Identify common vulnerabilities
  - Plan ways to mitigate

Community Integration

- Use existing resources in planning
- Use processes that share workload and streamline existing policies
- Use expertise of others to assist you
- Remember planning takes time

Community Integration

- Community response integral to evacuation planning
  - Include essential response partners including local, regional, state, and federal agencies
  - Identify roles/responsibilities of partners

Types of Mitigation

- Structural
  - Physical changes to reduce risks
- Non-structural
  - Policies and procedures
  - Training and exercises

Questions to Consider

- What are the major weaknesses in your facility and the surrounding area?
- Which stakeholders should be brought together in your community planning process?
- What mitigation techniques can be used to minimize you facility's major weaknesses?

Memoranda of Understanding (MOU)

- Formalizes resource sharing between each participating party in an incident
- Established prior to incident
- Avoid same vendor resource dependency

Common Healthcare MOUs

- Transportation
- Facilities
- Supplies
- Equipment
- Personnel

Questions to Consider

- What MOUs are in place in your facility?
- What additional MOUs are needed?

- Assessing Risks
- Developing the Plan
- Evacuating the Facility
- Recovering

LESSON TWO: Developing the Plan

Objectives

- Upon completion of this lesson, the participants will be able to identify four (4) crucial components in developing an emergency evacuation plan.

Critical Plan Components

- Activation
- Identification of alternate sites
- Evacuation resources
- Resources/ continuity of care

California Hospital Association; "Hospital Evacuation Checklist" retrieved from http://www.calhospitalprepare.org/category/content-area/planning-topics/evacuation

Critical Plan Components

- External transport resources
- Patient evacuation
- Tracking destination/ arrival of patients
- Family/ Responsible party notification

California Hospital Association; "Hospital Evacuation Checklist" retrieved from http://www.calhospitalprepare.org/sites/epbackup.org/files/resources/HospitalEvacuationPlanChecklistCHAv07092008.doc

Critical Plan Components

- Additional governmental notification
- Facility evacuation confirmation
- Transport of records, equipment and supplies

California Hospital Association; "Hospital Evacuation Checklist" retrieved from http://www.calhospitalprepare.org/sites/epbackup.org/files/resources/HospitalEvacuationPlanChecklistCHAv07092008.doc

Key Components: Activation

- Facility evacuation decision
  - 96 hour assessment – failures in critical areas
  - Level of evacuation (shelter-in-place, partial or complete)
  - Pre-event or post-event

96-Hour Assessment

- Used to determine if a facility can provide safe patient care and treatment for 96-hours (4 days) after an incident without assistance from the community
- Consider failures in six critical areas

Failures in Critical Areas

- Communications
- Resources and assets
- Safety and security
- Staff responsibilities
- Utilities management
- Patient and clinical support activities

Key Components: Alternate Care Sites

- Identify patient needs
  - What special resources will they need in event of evacuation?
- Matching clinical specialties
- Within healthcare system
- Identify sites

Key Components: Patient Evacuation

- Shelter-in-Place
- Evacuation
  - Horizontal/ Vertical
  - Partial
  - Complete
- Shelter-in-Place vs. Evacuation

Shelter-in-Place

- Protective action strategy taken to maintain patient care within facility and to limit movement of patients, staff and visitors to protect people and property
- Preferred option
- Engineering interventions
- Prolonged shelter-in-place

Evacuation

- Horizontal/ Vertical
  - Evacuation beyond corridor fire doors and/or smoke zones into adjacent secure area
- Partial
  - Evacuation of certain groups of patients/ residents or areas within facility
- Complete
  - Evacuation of entire facility

Shelter-in-Place or Evacuate

- Decision requires consideration of two factors
  1. Nature of event

     Expected time of arrival, magnitude, area of impact, duration
  2. Anticipated effects on both the facility and the surrounding community given nature of event and results of HVA and 96-hour assessment

Patient Prioritization

- Evacuation Category Levels of Acuity
  - **Level 4:** self-sufficient, patients who are ambulatory, minimal nursing care
  - **Level 3:** Ambulatory, moderate nursing care
  - **Level 2:** Non-ambulatory, frequent nursing supportive care (post-op, step-down units)
  - **Level 1:** Non-ambulatory, continuous nursing care and observation (ICU, Isolation)

Sequence of Evacuation

- Which floors/zones should move first
  - Areas in **greatest danger** should be first to move, followed by adjacent areas
  - If there is no immediate threat, evacuate facility **top to bottom**

Methods of Patient Evacuation

- Elevators if permitted by Fire Dept
- Ambulatory patients
  - Stairs accompanied by staff
- Non-ambulatory patients
  - Special Equipment
- Patients who cannot be evacuated
  - Ethical Issues

Decision Making: Pre-Event

- Event Characteristics
  - Area impacted
  - Duration
- Anticipated Effects
  - On patient-care resources
  - On surrounding environment

Decision Making: Post-Event

- Inspect critical areas ASAP after event
- Three possible post-event conditions
  - No threat to patient/staff safety
  - Immediate threat to patient/staff safety
  - Potential or evolving threat to patient/staff safety
    - Wait and reassess
    - Start evacuation

Pre-Event vs. Post-Event

- Pre-event evacuation
  - Option in advance warning events
  - Carried out in anticipation of an impending event
- Post-event evacuation
  - Can be used either post advanced warning event or in no warning event

Key Components: Governmental Notifications

- City/County Emergency Management Coordinator
- State Department of Health
- The Joint Commission (if applicable)
- Other departments/agencies per state/ local guidelines

Key Components: Transportation

- Modified triage
  - Order patient transport based on resources
- Method of transport
  - Ambulance (Emergent or Non-Emergent)
  - Public transportation

Patient Transport

- Pre-identify and use only authorized vehicles
- Use private vehicles only as last resort
- Vehicle staging supervisor

Key Components: Patient Tracking

- Tracking of patients
  - Keep accurate records of who goes where
  - Ensure medical records / personal property travel with patient

Patient Tracking

- Patient tracking should include:
  - Patient name
  - Admission date
  - Patient identification number
  - Hospital identification number
  - Mode of transportation
  - Receiving facility
  - Attending and receiving physicians

Patient Tracking

- System in place to identify and track patients
  - Wristbands
  - Radio frequency identifier chips (RFID)
- Patient transfer request coordinated from central location
  - Emergency Operations Center (EOC)
  - Regional Medical Operations Center

Questions to Consider

- Who at your facility can order an evacuation?
- What would the sequence of patient evacuation be in your facility? By acuity level or by floor and why?
- What alternative care sites are available to accommodate your patient population in an evacuation situation?

Critical Role of Water

- Children's Hospital of New Orleans
- Able to withstand Hurricane Katrina and resulting flooding

AHRQ Hospital Evacuation Decision Guide pg. 14; Publication #10-0009, May 2010
Photo: Children's Hospital, New Orleans, 2010 http://www.chnola.org/content/Locations.htm

Critical Role of Water

- But Children's dependent on city's water supply and had little or no reserves
- When city water supply failed, no water for cooling systems and air conditioning
- Facility evacuated due to heat

AHRQ Hospital Evacuation Decision Guide pg. 14; Publication #10-0009, May 2010
Photo: Children's Hospital, New Orleans, 2010 http://www.chnola.org/content/Locations.htm

Backup Generators

- VA Medical Center: New Orleans, LA
  - Evacuate majority of facility within 4 days of Hurricane Katrina
  - Generators above water; continued functioning through storm, for weeks until power restored
- Other hospitals had generator failures
  - Charity used backup generators
  - Tulane's backup failed jeopardizing research

Boilers and Chillers

- Mount Auburn Hospital: Cambridge, MA
  - Boiler failure in December, 2005
  - Patient evacuation began within one hour
- New Jersey explosion destroyed boiler and chiller
  - Proactive evacuation

AHRQ Hospital Evacuation Decision Guide pg. 15; Publication #10-0009, May 2010
Photo: Mount Auburn Hospital, 2010 from http://nerej.com/27523

Evacuation Security Concerns

- Kindred Hospital, New Orleans, lost water supply 1 day after Hurricane Katrina hit
- Hospital administrator made evacuation decision
- Area civil unrest delayed evacuation efforts
- Ambulances forced to back; private security also delayed because of security issues

Hospitals Closely Monitor Hurricane Rita

- Sunday—5 days before landfall
  - September 18, 2005, tropical storm
  - University of Texas Medical Branch (UTMB) Galveston, TX activated hurricane preparedness plan
- Monday
  - reclassified hurricane; census reduction initiated

Hospitals Closely Monitor Hurricane Rita

Tuesday—3 days prior to landfall

- UTMB EOC activated; all emergency plans activated; State EOC to acquire ground transportation for evacuation of patients

- Wednesday—2 days prior to landfall
  - 7:00 am, hospital evacuation ordered; assessment/triage of patients; medical records copying began

Bomb Threat

- Galion Community Hospital: Galion, Ohio
- Received bomb threat at 9:30, 1999
- Threat announced over intercom; ICS team assembled; FD, PD, security, and building engineers searched building
- Second threat received one hour later
- 5 minutes later evacuation order given

Deciding to Shelter-in-Place

- Innovis Health: Fargo, ND
- March 2009 hospital flooded
- Administrators chose to shelter-in-place even after area-wide evacuation orders
- Facility was prepared to operate 10 days without external supplies
- Facility was able to remain open throughout the entire incident

Pre-Event Evacuation Decisions

- Merit Care Hospital: Fargo, ND
- March 2009 area flooding
- Reduction of patient census to high-risk patients only
- Full evacuation ordered prior to nearby river's cresting
- Evacuated early to avoid competition for transportation

Out of Service Elevators

- Memorial Herman Hospital: Houston, TX
  - Elevators failed, patients carried down 10 flights of stairs by staff and volunteers
  - Exhaustion halted evacuation temporarily
- VA Medical Center: New Orleans, LA
  - Power continued, elevators functioned
  - Post-hurricane flooding filled elevator shafts making them unsafe for use

Hospital Evacuates

- Columbus Regional Hospital: Columbus, IN
  - Summer, 2008—large amounts of rain caused levy break in southern Indiana
  - Basement of hospital flooded and power lost
  - Full evacuation of facility occurred
  - 157 patients evacuated in 3 hours

AHRQ Hospital Evacuation Decision Guide pg. 47; Publication #10-0009, May 2010

- Assessing Risks
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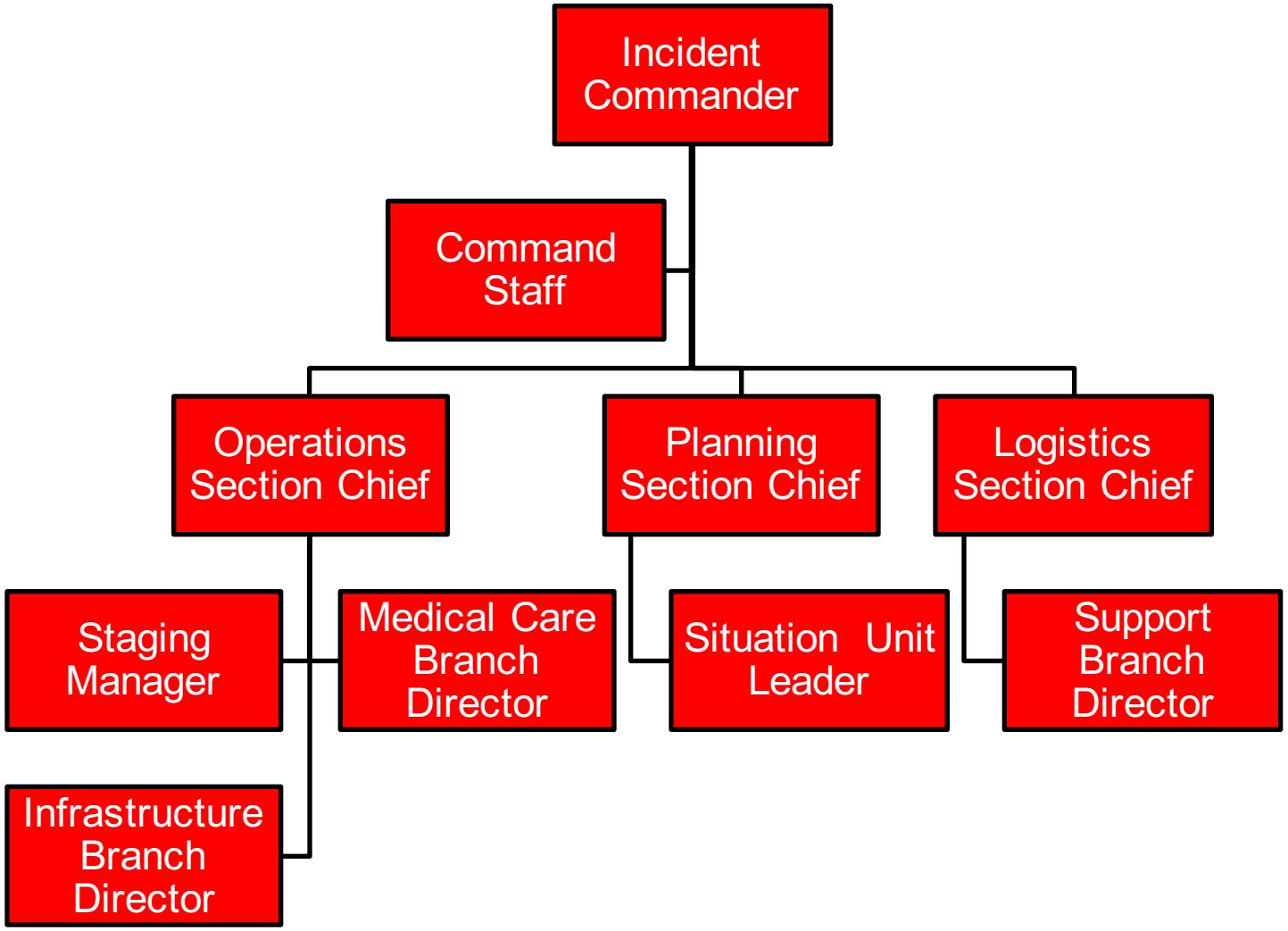
- Recovering

LESSON THREE: Evacuating the Facility

Objectives

- List four (4) key positions in an Incident Command System needed to facilitate a patient evacuation

Evacuation: Immediate (0-2 Hours)



Evacuation: Immediate

- Incident Commander
  - Activate facility emergency operations plan
  - Appoint Command Staff and Section Chiefs
- PIO
  - Conduct regular media briefings on situation status and appropriate patient information
  - Oversee patient family notifications of evacuation, transfer or early discharge

Evacuation: Immediate

- Liaison Office
  - Communicate with local agencies, about facility status and evacuation order
- Safety Officer
  - Oversee immediate stabilization of facility
  - Recommend areas for immediate evacuation to protect life
  - Ensure safe evacuation of patients, staff and visitors

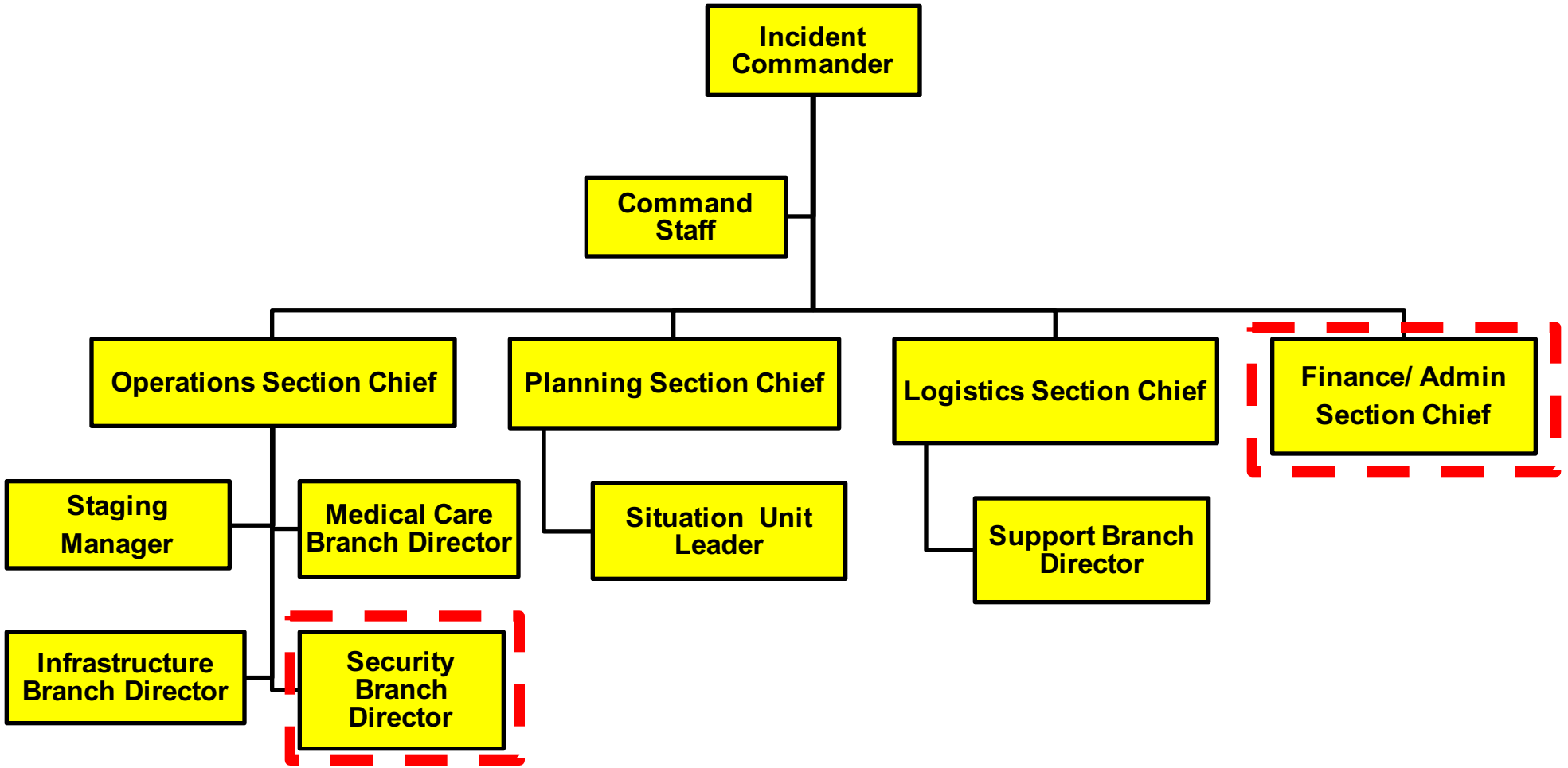
Evacuation: Immediate

- Operations Section
  - Implement emergency life support procedures
  - Determine needed evacuation type
  - Patient prioritization
  - Prepare patient records for transfer
  - Discharge appropriate patients
  - Coordinate transportation
  - Implement evacuation plan

Evacuation: Immediate

- Planning Section
  - Track patients and personnel
  - Establishing operational periods
  - Ensure documentation

Evacuation: Intermediate (2-12 Hours)



Evacuation: Intermediate

- Incident Commander
  - Notify internal authorities of situation status and evacuation
- Liaison Officer
  - Integrate with external agencies
- Safety Officer
  - Conduct ongoing safety analysis

Evacuation: Intermediate

- Operations Section
  - Appropriate patient care during
  - Security and traffic control
  - Family notifications
  - Facilitating discharges
  - Communication of patient information to receiving facilities

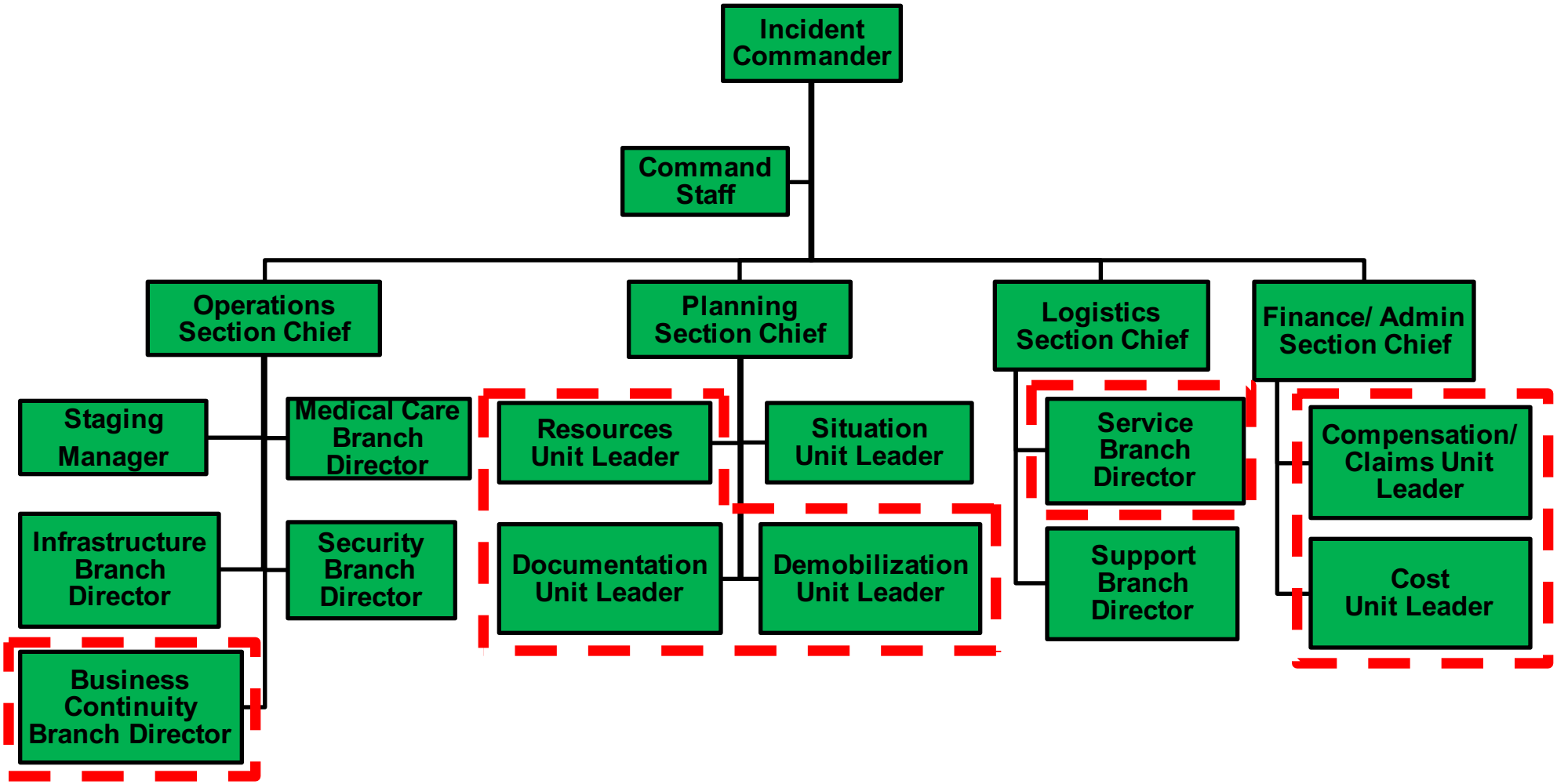
Evacuation: Intermediate

- Planning Section
  - Patient and personnel documentation and tracking
  - Update/ revise Incident Action Plan
- Logistics Section
  - Provide supplemental staffing
  - Monitor damage/ initiate repairs
  - Initiate salvage operations

Evacuation: Intermediate

- Finance Section
  - Track costs and expenditures of response and evacuation
  - Track estimates of lost revenue due to evacuation of facility

Evacuation: Extended (12+ Hours)



Evacuation: Extended

- Incident Commander
  - Status updates from Command Staff and Section Chiefs
- Liaison Officer
  - Continue to update agencies on situation status
- Safety Officer
  - Ensure safety of ongoing operations

Evacuation: Extended

- Operations Section
  - Ensures patient care and management for patients waiting evacuation
  - Secure all areas, equipment, supplies and medications
  - Continue business continuity and recovery actions

Evacuation: Extended

- Planning Section
  - Patient and equipment tracking
  - Prepares demobilization plan
  - Continues documentation
- Logistics Section
  - Support evacuation supplies
- Finance Section
  - Track and report expenditures and lost revenues

Questions to Consider

- Who in your organization would fill the roles of Incident Commander, Planning Chief, Logistics Chief, and Operations Chief?
- Who are their backups in case they are away from the facility?
- How would your Incident Management Team make transitions between operational periods if the event extended several days?

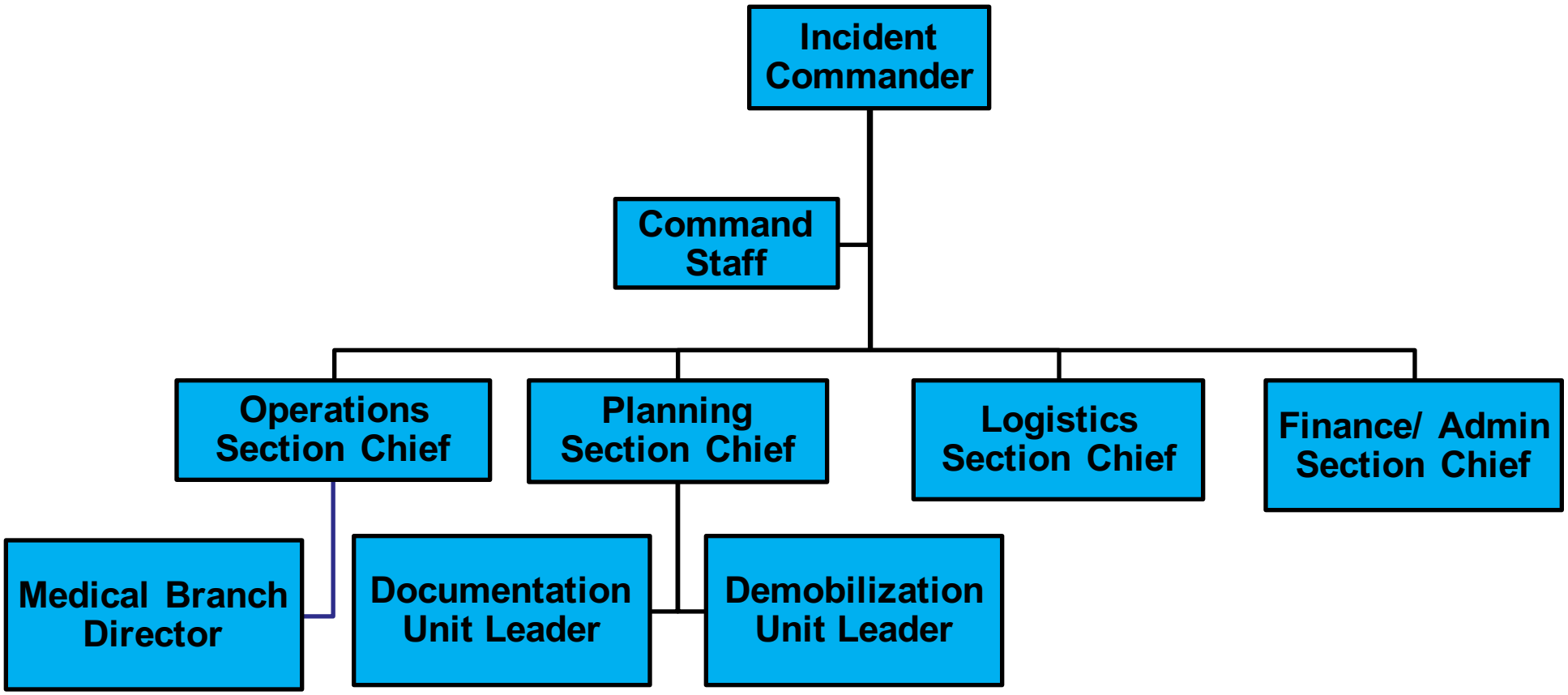
- Assessing Risks
- Developing the Plan
- Evacuating the Facility
- Recovering

LESSON FOUR: Recovering

Objectives

- Identify incident management team roles and tasks in demobilization and recovery after an emergency evacuation.

Demobilization/ System Recovery



Demobilization/ System Recovery

- Incident Commander
  - Assess criteria for reopening of facility
  - Order reopening and repatriation of patients
  - Oversee restoration of normal operations
- PIO
  - Conduct final media briefing announcing incident termination

Demobilization/ System Recovery

- Liaison Officer
  - Notify local agencies of event termination and facility reopening
- Safety Officer
  - Oversee safe return to normal operations and repatriation of patients

Demobilization/ System Recovery

- Operations Section
  - Restore patient care and management activities
  - Repatriate evacuated patients
  - Re-establish visitation and non-essential services

Operations: Assessment Teams

- Developed to assess functional areas
- Comprised of technical experts and facility experts relevant to the team's function
  - Should include hospital staff, vendors, and field experts

Operations: Assessment Teams

- Teams should assess all areas looking for common deficiencies and damage specific to the team's function/ relevance
- Can develop sub-teams to carry out specific functions
- Perform assessment, make repairs, and develop a recovery plan

Operations: Assessment Teams

- Security and fire safety
- Medical
- Ancillary services
- Materials management
- Support services
- Facilities
- Biomedical engineering
- IT & communications

Demobilization/ System Recovery

- Logistics Section
  - Implement and confirm facility cleaning and restoration
    - Structure
    - Medical equipment certification
    - Provide debriefing and mental health support
    - Inventory supplies, equipment, food, and water needed to return to normal levels

Demobilization/System Recovery

- Planning Section
  - Finalize Incident Action Plan and demobilization plan
  - Compile final report of incident and hospital response and recovery operations
  - Ensure appropriate archiving of incident documentation
  - Write after-action report and corrective action plan

Demobilization/ System Recovery

- Finance Section
  - Compile final response, recovery cost and expenditure, estimated lost revenues
  - Submit to Incident Commander for approval
  - Contact insurance carriers to assist documenting structural and infrastructure damage and initiate claims

Questions to Consider

- What types of disasters has your facility experienced that required demobilization/ systems recovery?
- What assessment teams does your facility have established for use during the demobilization/ systems recovery phase?

- Assessing Risks
- Developing the Plan
- Evacuating the Facility
- Recovering

LESSON FIVE: Conclusion

Objectives

- Upon completion of this lesson, participants will be able to identify the four (4) phases of evacuation with 100% accuracy.

Assessing Risks

- Hazard Vulnerability Analysis (HVA)
- Mitigation
- Memoranda of Understanding (MOUs)

Key Planning Components

- Activation
- Alternate care sites
- Patient evacuation
- Notifications
- Patient transport
- Patient treatment

Evacuating the Facility

- Immediate: 0-2 Hours
- Intermediate: 2-12 Hours
- Extended: 12+ Hours

Recovering

- Demobilization
- Assessment teams

Course Completion

- Post-test
- Course evaluation