DISASTER AND EMERGENCY PREPAREDNESS

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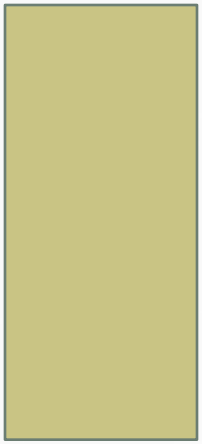


DISCLOSURES

- none

OBJECTIVES

- Be able to identify components of disaster response
- Become familiar with pre-disaster preparedness
- Be able to discuss plans for improving your workplace disaster preparedness
- Be able to utilize simple triage measures

DISASTER MEDICINE

EVENT MEDICINE


Photo by: AU Photographic Services

WHAT'S THE BIG DEAL WITH DISASTER/EMERGENCY PREPAREDNESS?

MASS CASUALTY

- Any event that overwhelms the usual capacity/ capability of a given entity (EMS agency, hospital, system)
  - ex. Natural disaster, Multi-car MVC, terrorist event, etc

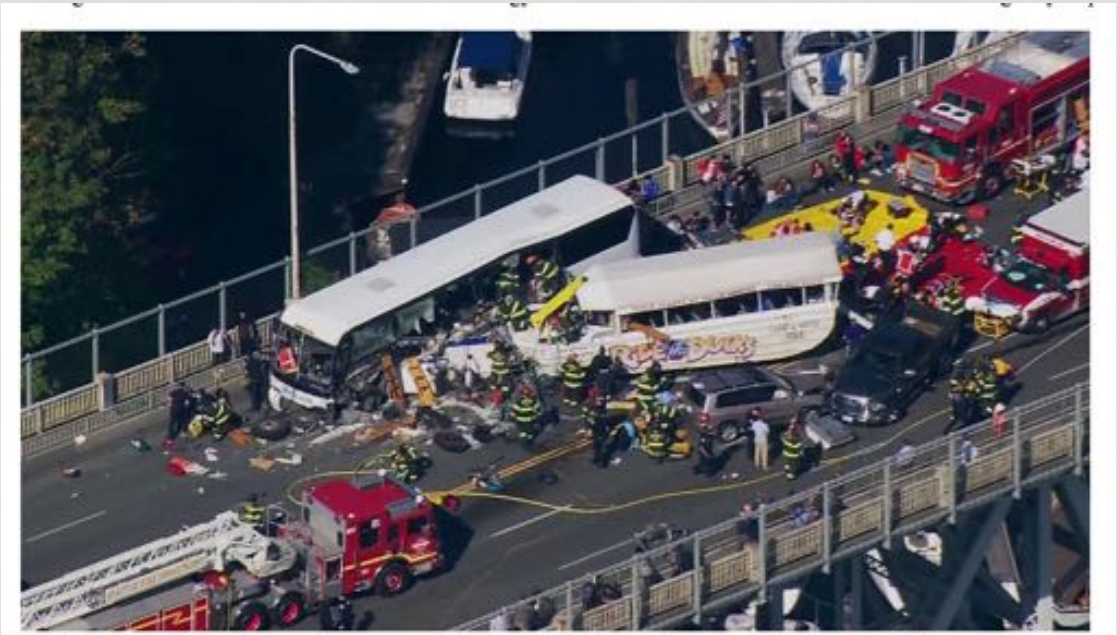
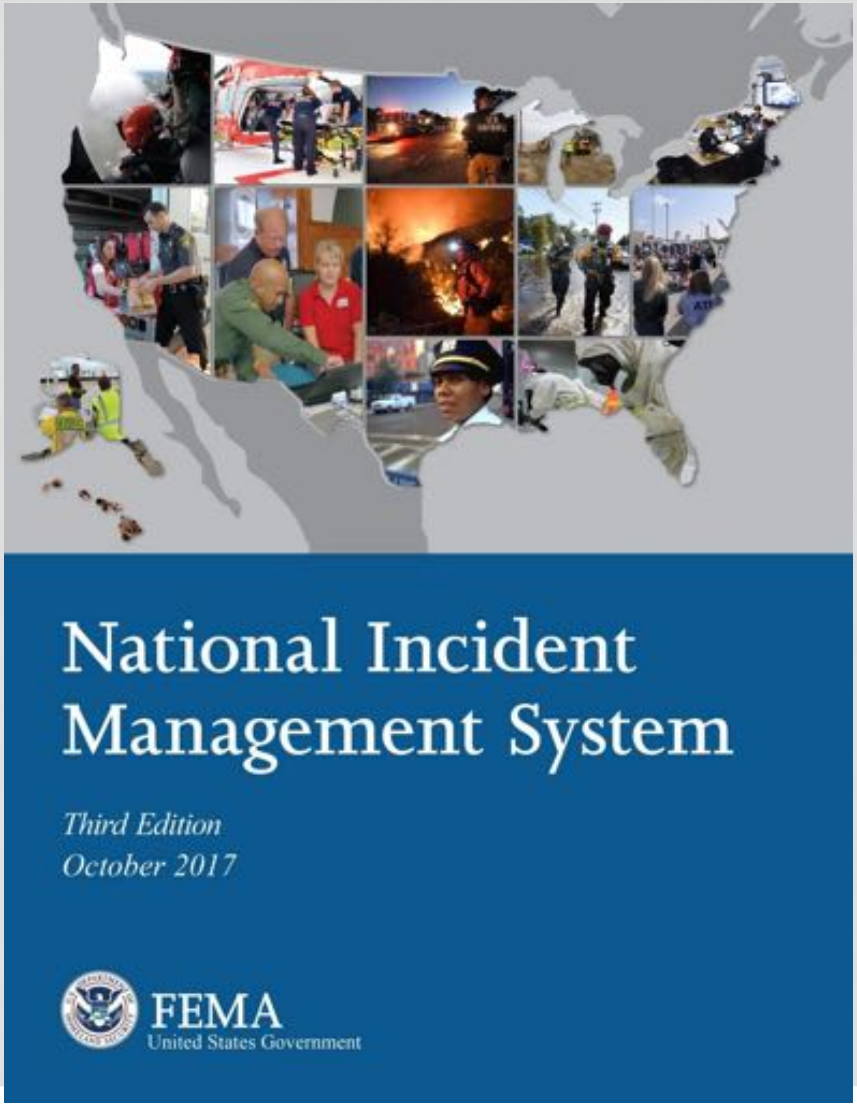


Image demonstrates the crash scene and onsite prehospital triage with *red* and *yellow* tarpaulins (image used with permission of King5

NIMS


National Incident Management System
Third Edition
October 2017
FEMA
United States Government

5 COMPONENTS TO NIMS

- Preparedness and Risk Mitigation
- Communications and Information Management
- Resource Preparation and Management
- Command and Management of the Event
- Ongoing Management/ Maintenance/ Recovery

OUR FOCUS TODAY?

PREPARATION

RESPONSE

RECOVERY

PREPARATION

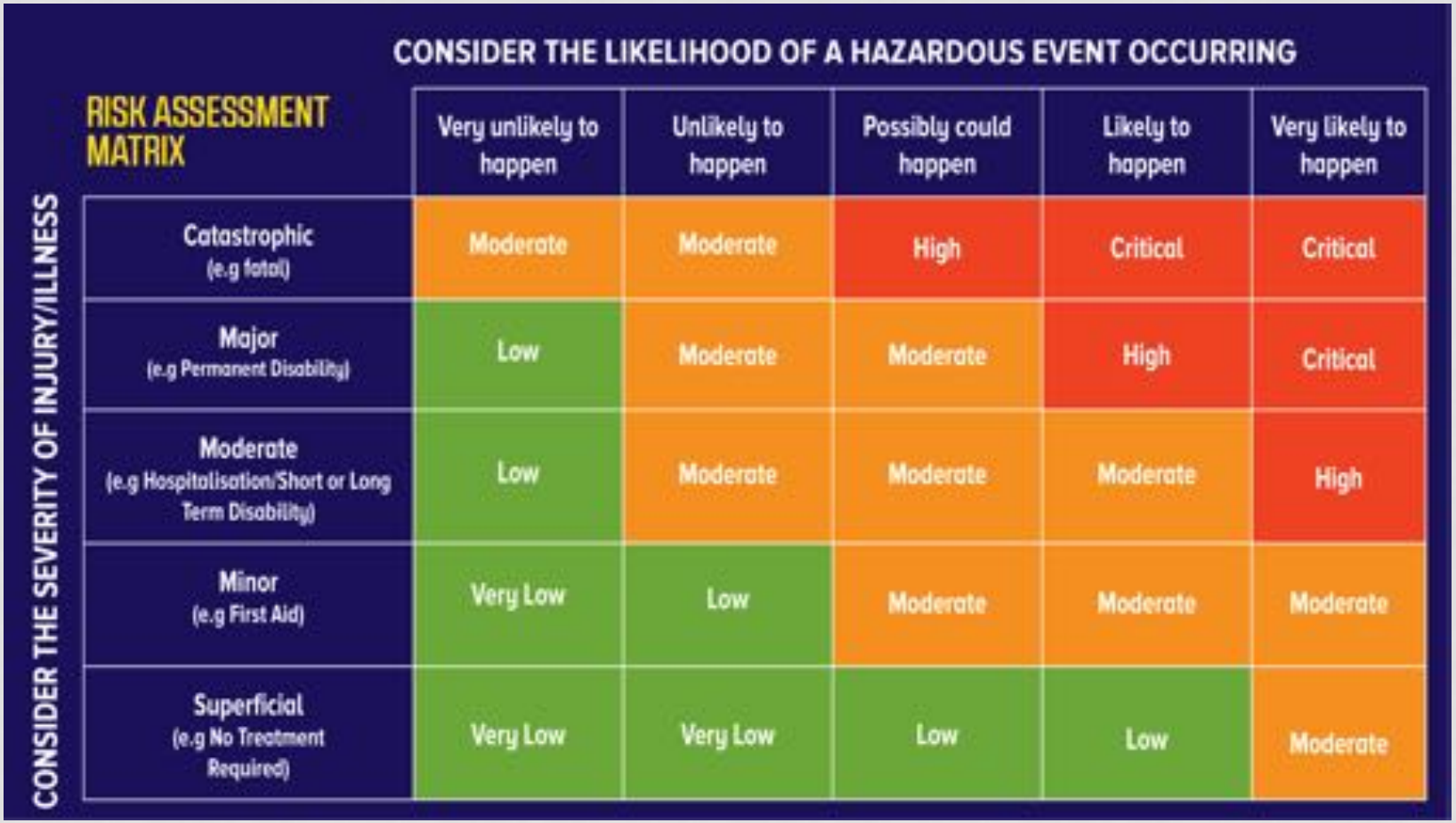
- Occurs BEFORE an incident
- All about risk identification and mitigation as well as preparedness of organization and staff

RISK ANALYSIS AND MITIGATION

- Hazard – Vulnerability Analysis

- Structural
  - Ex: Reinforcing or strengthening buildings
- Non-Structure
  - Lighting, Exit Signs, Non-slip strips on stairs, etc

HAZARD VULNERABILITY ANALYSIS



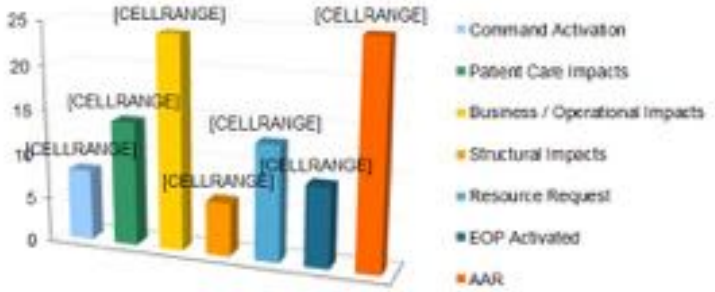
CONSIDER THE LIKELIHOOD OF A HAZARDOUS EVENT OCCURRING

CONSIDER THE SEVERITY OF INJURY/ILLNESS

RISK ASSESSMENT MATRIX	Very unlikely to happen	Unlikely to happen	Possibly could happen	Likely to happen	Very likely to happen
Catastrophic (e.g fatal)	Moderate	Moderate	High	Critical	Critical
Major (e.g Permanent Disability)	Low	Moderate	Moderate	High	Critical
Moderate (e.g Hospitalisation/Short or Long Term Disability)	Low	Moderate	Moderate	Moderate	High
Minor (e.g First Aid)	Very Low	Low	Moderate	Moderate	Moderate
Superficial (e.g No Treatment Required)	Very Low	Very Low	Low	Low	Moderate

SAMPLE HVA

EM INCIDENT IMPACTS/ACTIONS	OCCURRENCE
Command Activation	8
Patient Care Impacts	14
Business / Operational Impacts	24
Structural Impacts	6
Resource Request	13
EOP Activated	9
AAR	25
Total Incidents	**31**



2017

TOP 10 HVA	RANK	Risk
Tornado	1	59%
Fire, Internal	2	55%
Winter Storm	3	48%
Workplace Violence	4	44%
Tube System Failure, Unplanned	5	41%
Mass Casualty/NDMS Incident	6	40%
Infectious Disease Outbreak	7	38%
Severe Thunderstorm/High Wind	8	38%
IT System Disruption, Unplanned	9	37%
Transportation Incident	10	36%

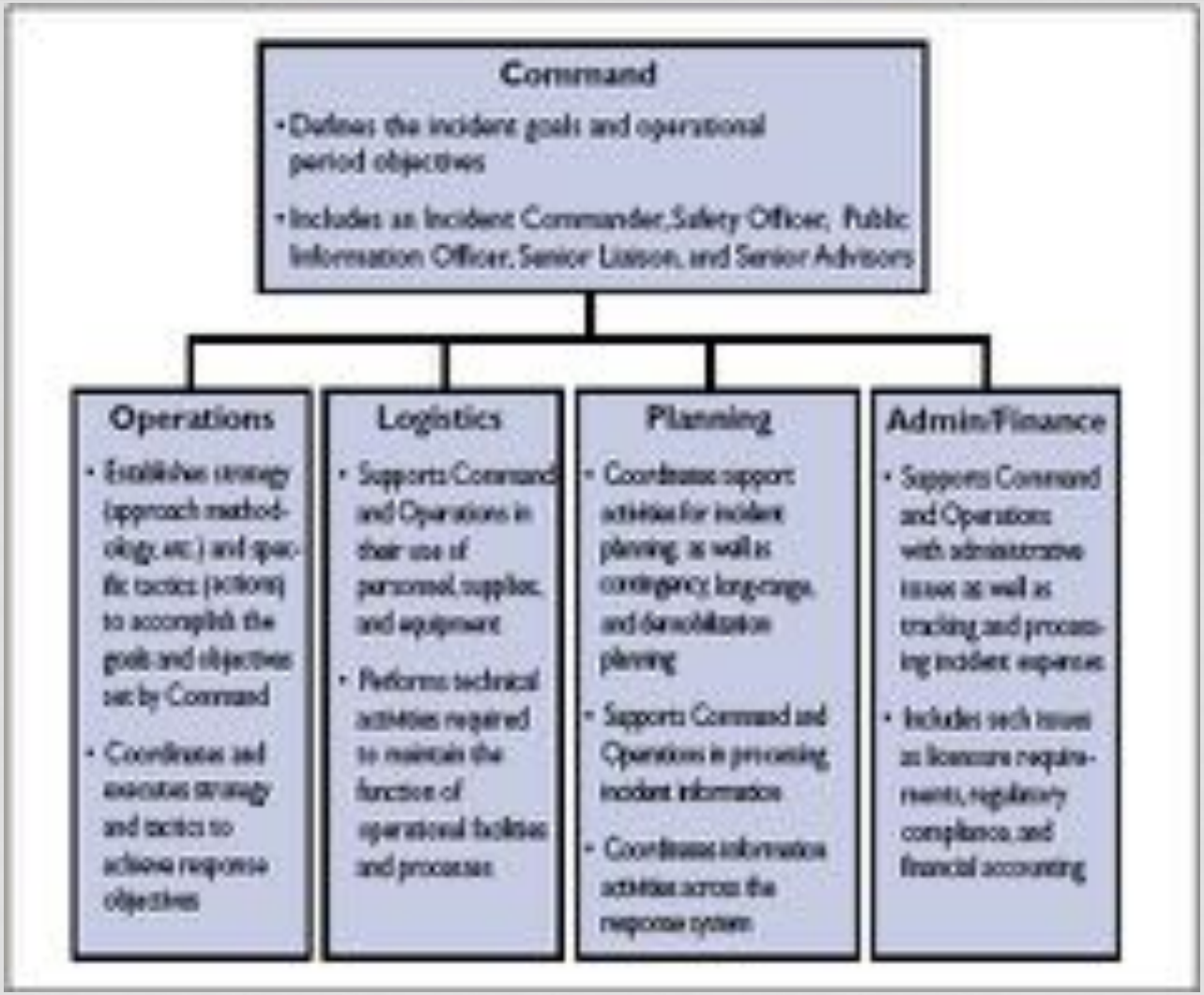
2017

TOP ACTUAL HAZARDS (Probability High)	Number/Year (Average)	HVA RANK
Patient Surge/Overcrowding	?	17
Workplace Violence	57	4
Elevator/Escalator Failure	45	15
Supply Chain Shortage/Failure	?	27
Severe Thunderstorm/High Wind	15	8
IT System Dysruption	10	9
Tube System Failure, Unplanned	6	5
Communications Failure	4	18
Building/Dept. Move	3	24
Tornado	2	1
Flood, External	2	13
Mass Casualty/NDMS Incident	1	6
Infectious Disease Outbreak	1	7
Winter Storm	1	3
Fire, Internal	1	2
Seasonal Influenza	1	16
Transportation Incident	1	10
Patient Decontamination, <5	?	14

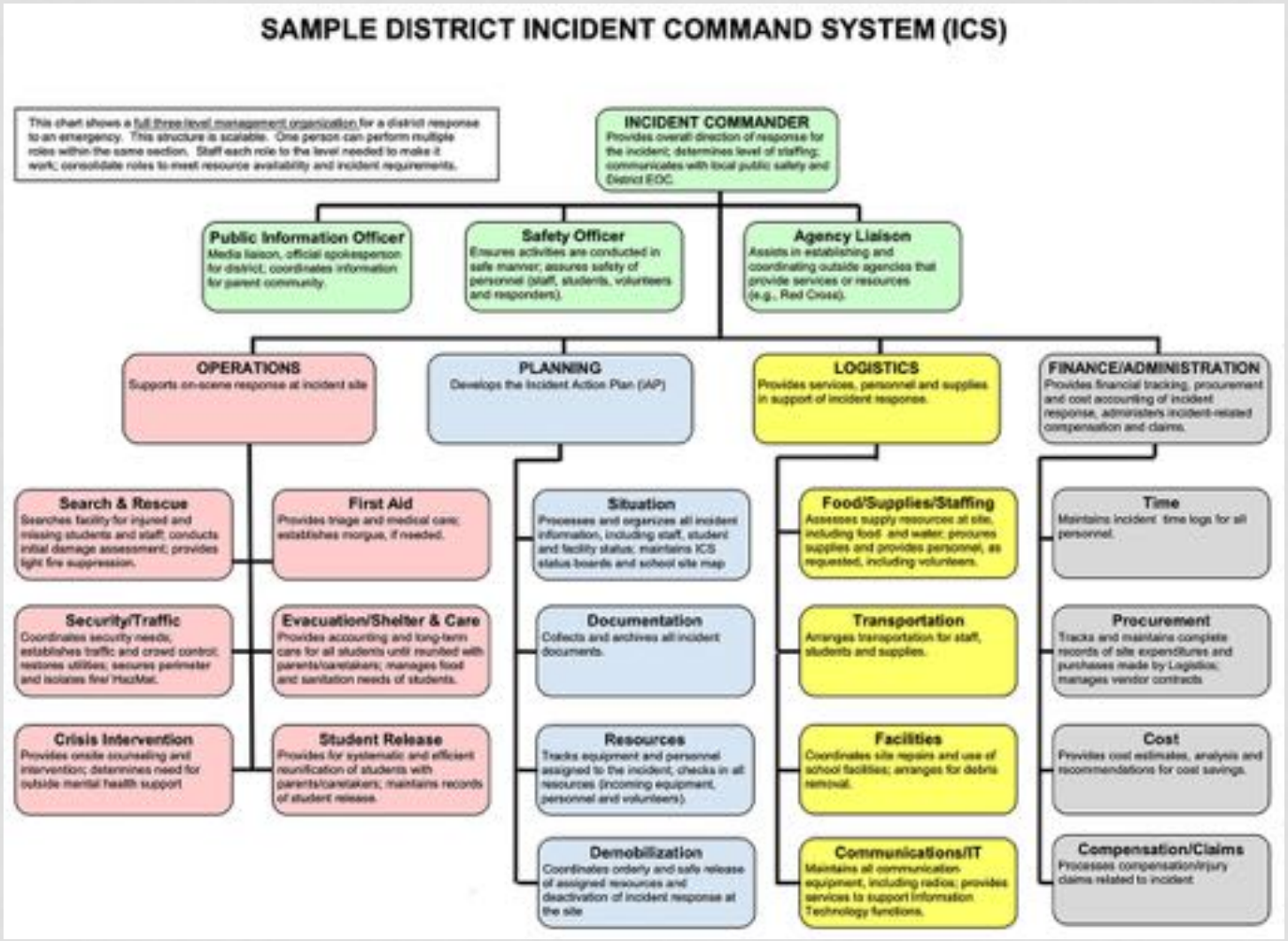
PREPAREDNESS

- Actions taken ***before*** an event to prepare the response
  - Emergency Management plan
  - Communications Plan
  - Drills and Exercises
    - Large, full scale drills
    - Table top exercises
    - Small "pop up pocket drills"
  - Stockpile and coordinate plans of access for supplies, medicines, equipment
  - Equip and plan EOC command structure and operations

BASIC COMMAND STRUCTURE



EXPANDED COMMAND STRUCTURE (EXAMPLE)



EXAMPLE OF FLOW OF AN EVENT/ DISASTER DRILL

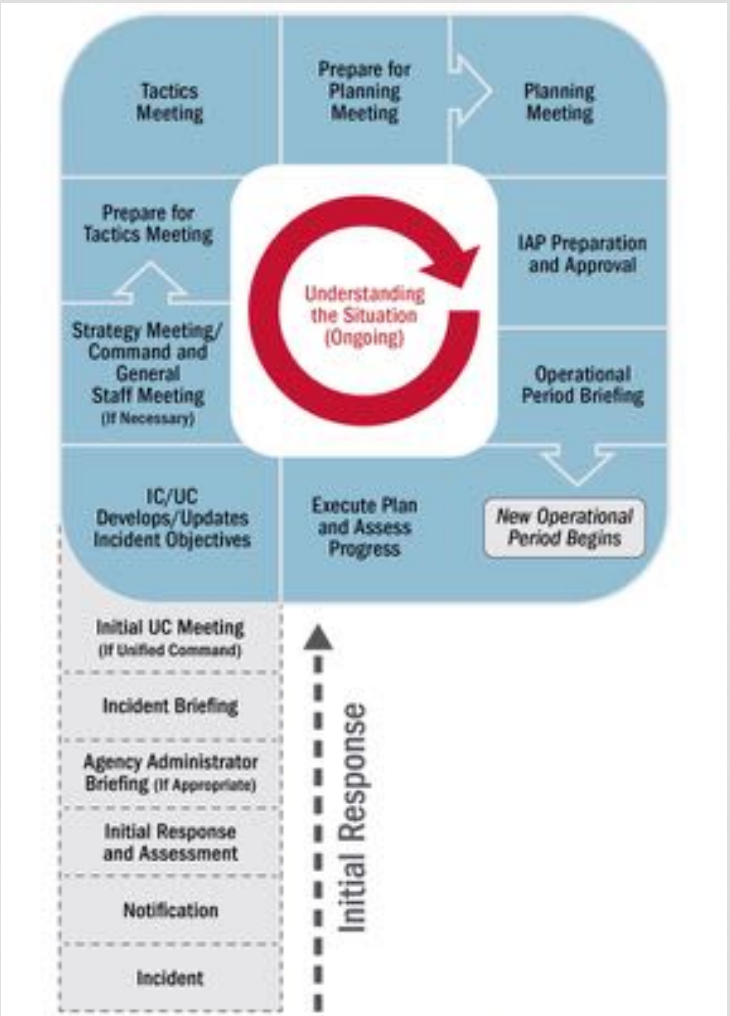


Figure A-12: Operational Period Planning Cycle

EVENT RESPONSE

INITIAL STEPS

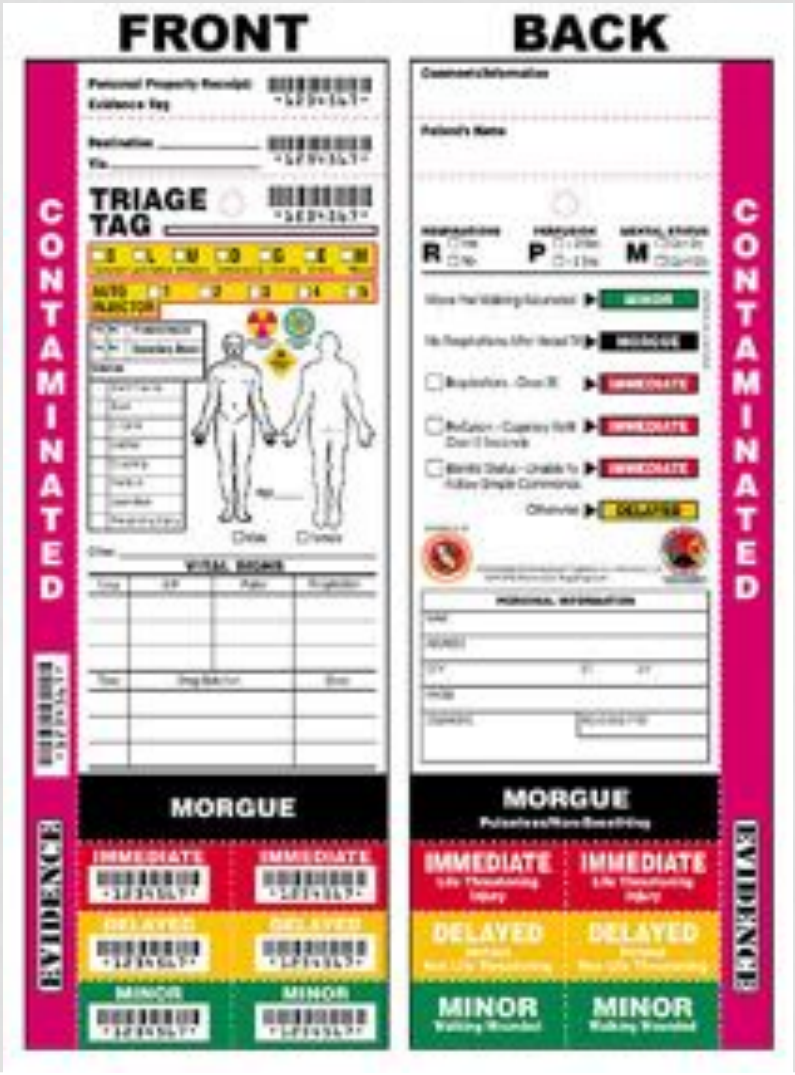
- Ensure safety of staff and patients
- Assess current resources
- Prepare for incoming patients

TRIAGE

Priority	Color	Condition	Notes
1	Red	Immediate	Life threatening
2	Yellow	Urgent	Can delay up to 1 hour.
3	Green	Delayed	Up to 3 hours.
4	Black	Deceased	No care needed

Priority 1 - Immediate Transport

Unconscious, disoriented, very confused, rapid respirations, weak irregular pulse, severe uncontrolled bleeding, other signs of

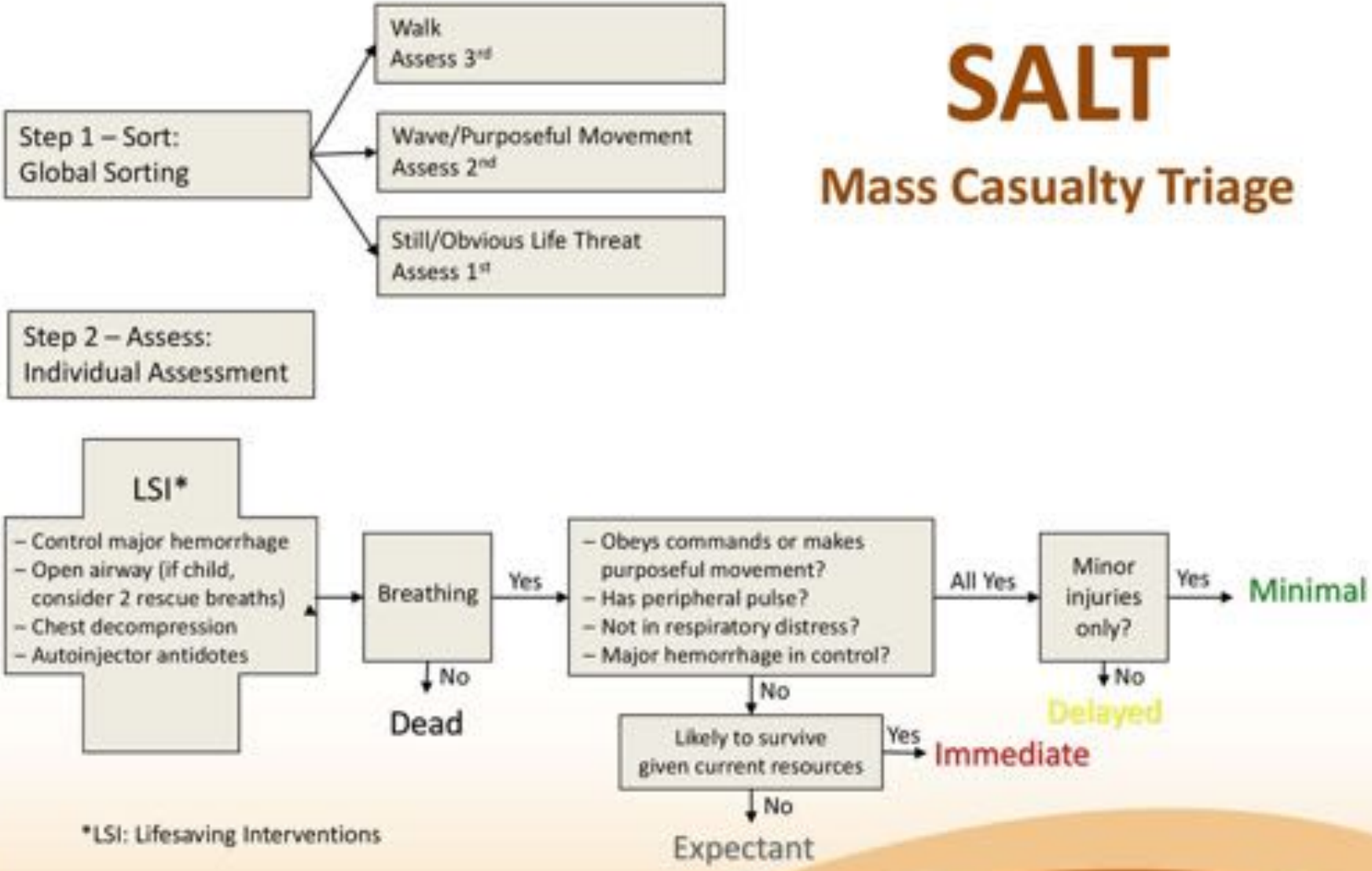


SALT

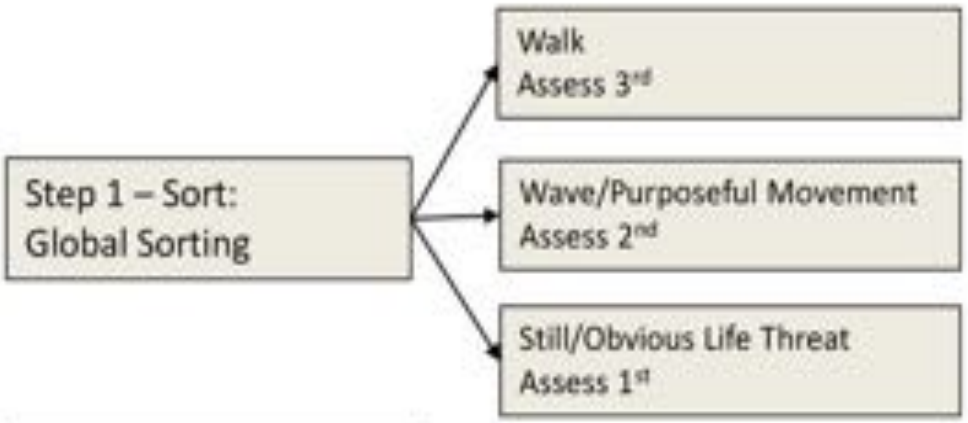
Mass Casualty Triage

SALT

Mass Casualty Triage

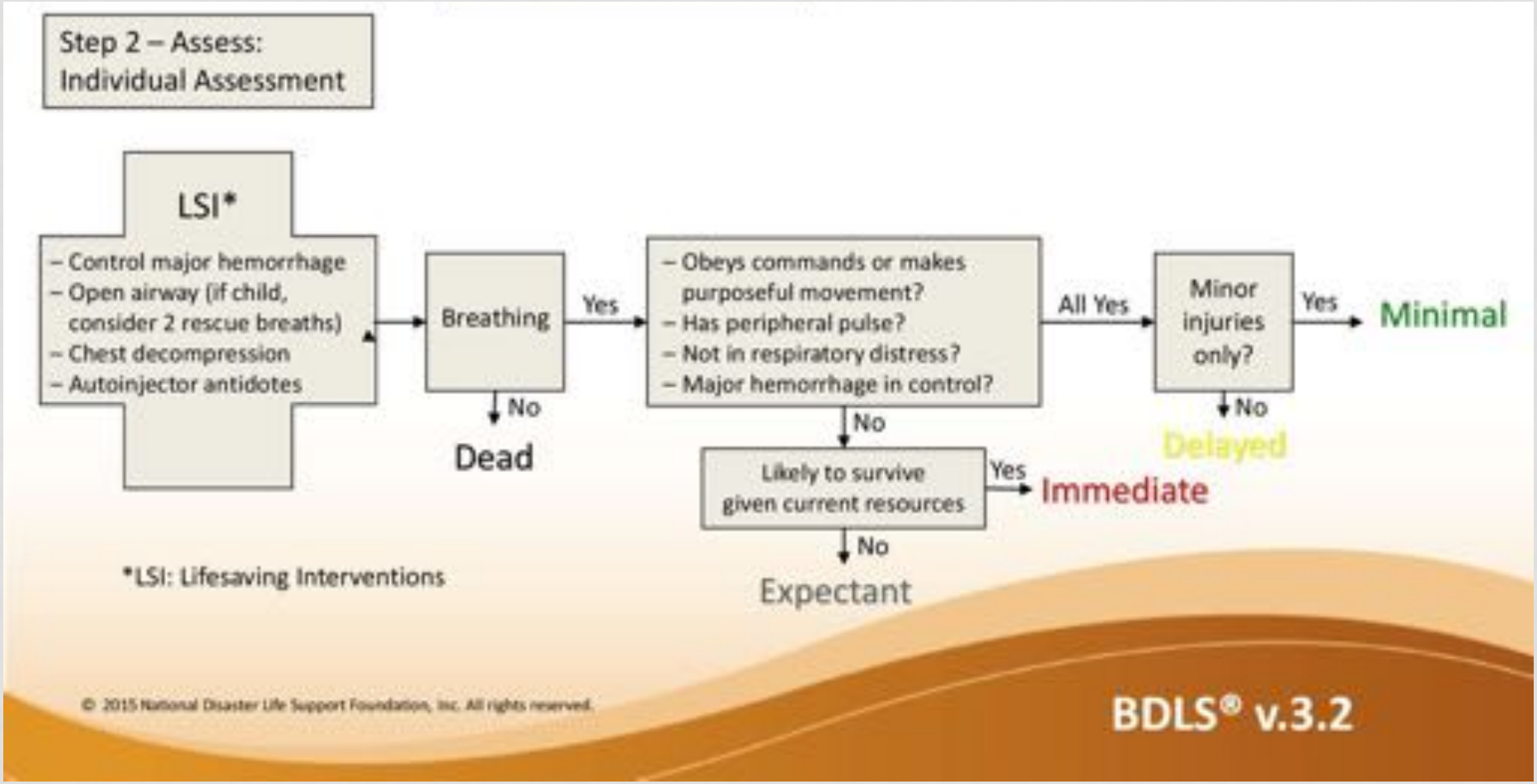


BDLS® v.3.2



SALT

Mass Casualty Triage


Step 2 – Assess:
Individual Assessment
LSI*
– Control major hemorrhage
– Open airway (if child, consider 2 rescue breaths)
– Chest decompression
– Autoinjector antidotes
Breathing
No
Dead
Yes
– Obeys commands or makes purposeful movement?
– Has peripheral pulse?
– Not in respiratory distress?
– Major hemorrhage in control?
No
Likely to survive given current resources
Yes
Immediate
No
Expectant
All Yes
Minor injuries only?
No
Delayed
Yes
Minimal
*LSI: Lifesaving Interventions
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START Triage

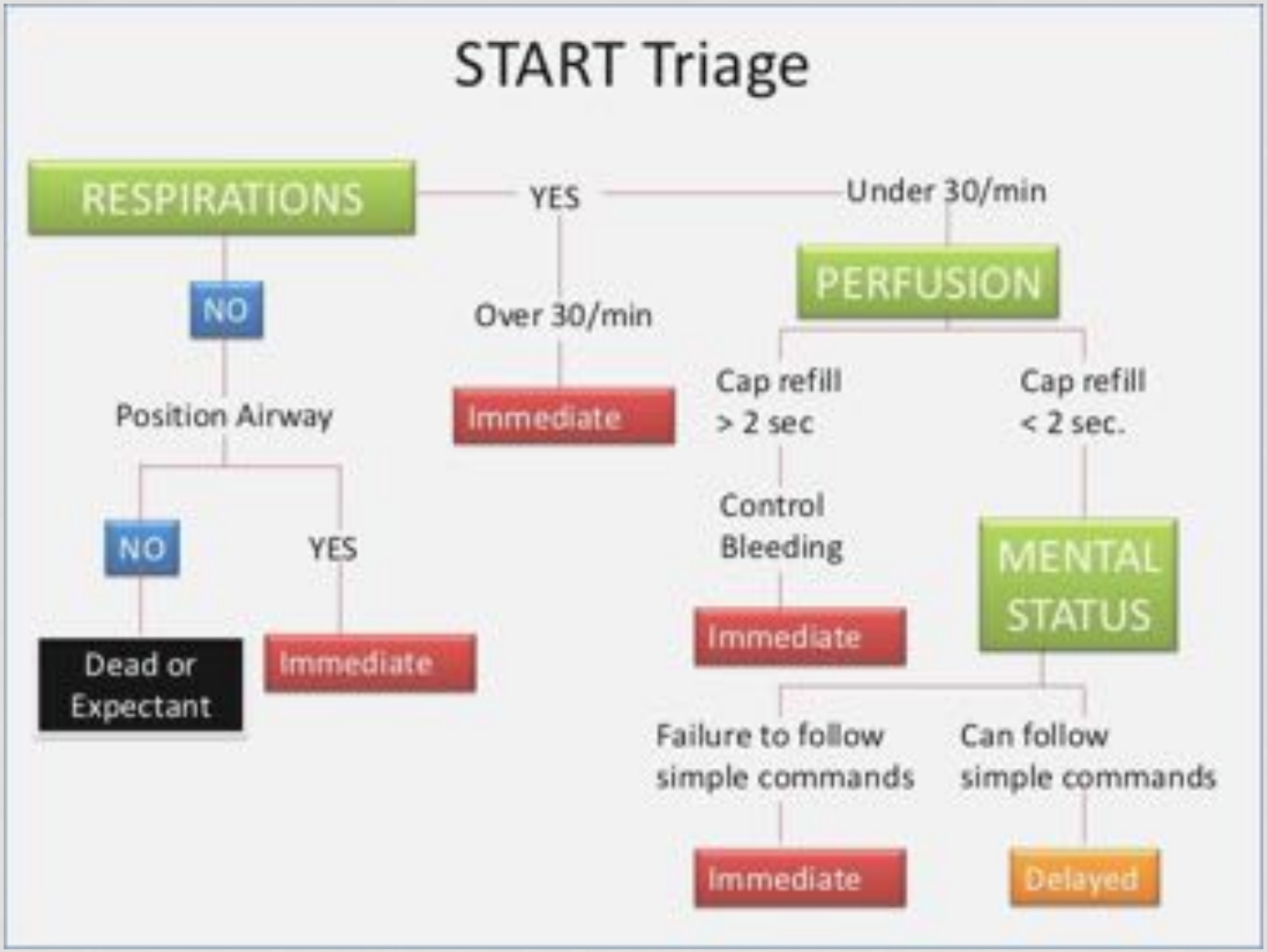
- Exclusion criteria - based on rapid assessment of "**RPM**"

Respirations → **A**irway / **B**reathing

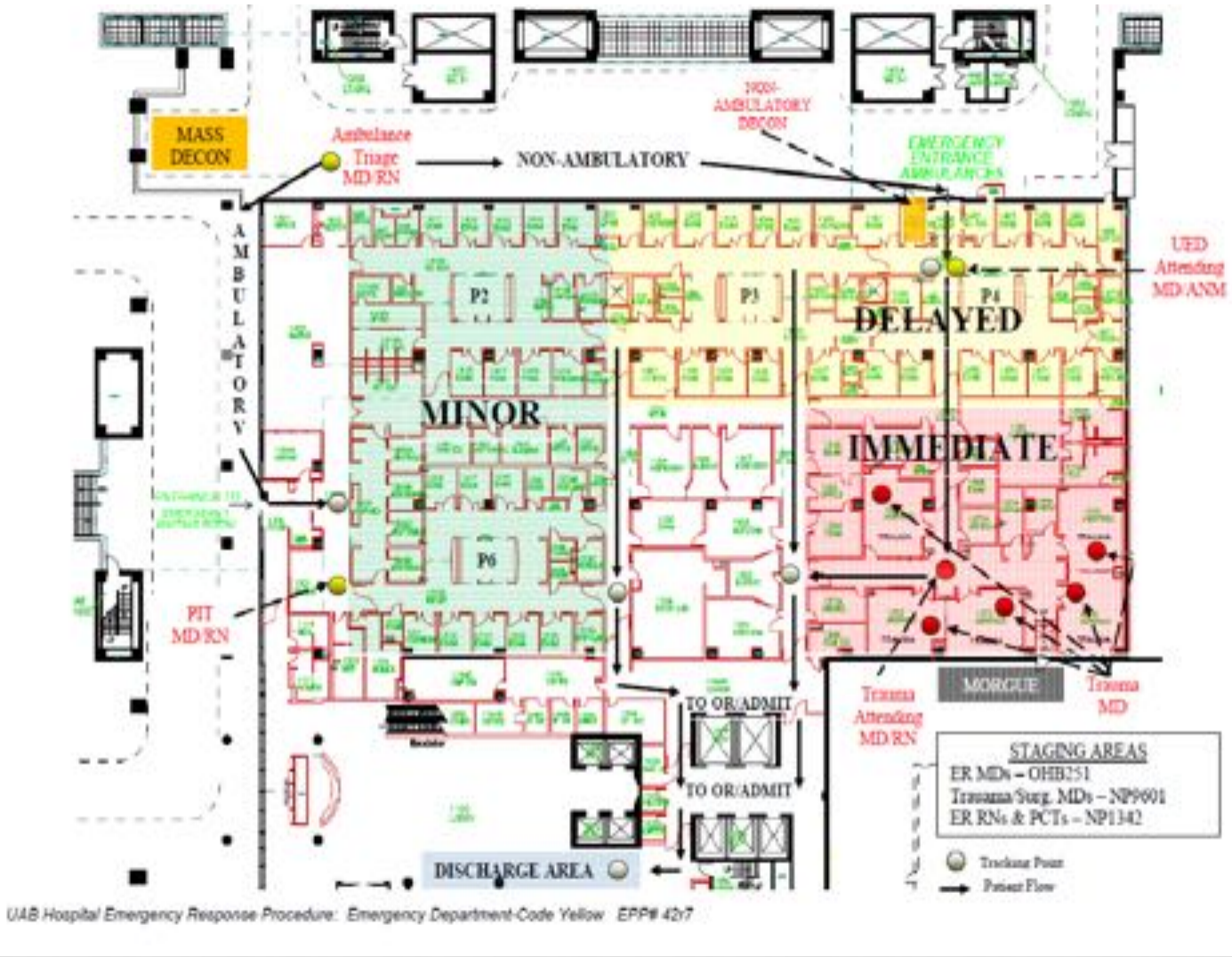
Pulse → **C**irculation

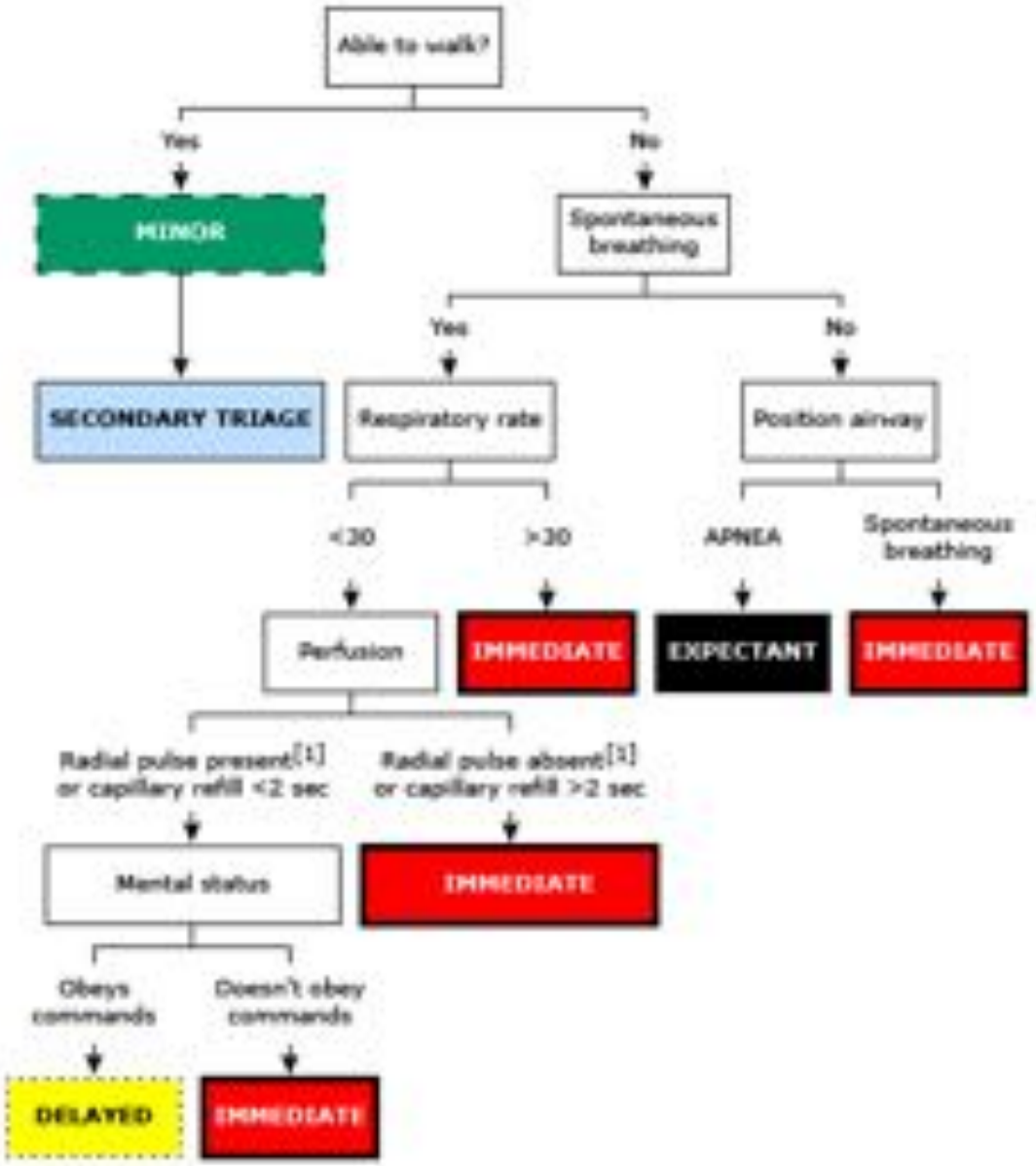
Mental Status → **D**isability

SIMPLE TRIAGE AND RAPID TREATMENT



LEVEL 2 PATIENT FLOW





Triage categories

EXPECTANT Black triage tag node

- Victim unlikely to survive given severity of injuries, level of available care, or both
- Palliative care and pain relief should be provided

IMMEDIATE Thick border red triage tag node

- Victim can be helped by immediate intervention and transport
- Requires medical attention within minutes for survival (up to 60)
- Includes compromises to patient's airway, breathing, circulation

DELAYED Dotted border yellow triage tag node

- Victim's transport can be delayed
- Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours

MINOR Dashed border green triage tag node

- Victim with relatively minor injuries
- Status unlikely to deteriorate over days
- May be able to assist in own care: "Walking wounded"

HAZARDOUS MATERIALS RECOGNITION & SAFETY

- Recognition leads to safety
- Safety leads to lives preserved

NOT ALWAYS REPORTED AS HAZMATS

- **Traffic accident**
- **Medical aid**
- **Fire, person down, etc.**

Initial report may not indicate presence of hazardous materials!

CLUES FROM THE PATIENT

- Patient has an unusual odor
- Patient has a strange liquid/powder on them
- Patient was involved in a chemical fire
- Patient talks about being in a strange vapor
- Patients skin is an unusual color

“CLUES” ARE “CLUES”!

- They are:
  - Warnings
  - Notes of caution
  - Indications of things to come

  - ***But not always all the answers!***

TRIAGE CLUES

- Liquids or powders on the patient
- Odors
- What were they doing when this happened?
- Where were they?
- How long ago did the accident occur?

Need to recognize and act fast and save your ED !

RADIOLOGICAL/ BIOHAZARD/ CHEMICAL EMERGENCIES

- One of the main goals during one of these events is patient decontamination
- Staff dresses in appropriate high level PPE to help prevent contamination
- Removal of patient's clothing can reduce contamination of a patient by up to 90%

RADIOLOGIC DISPERSAL DEVICE

- Any device that intentionally spreads radioactive material across an area with the intent to cause harm
- Can be explosive or non-explosive …
- Non-explosive – spread of material using common items such as fans, building ventilation system or spreading by hand
- Explosive – will not result in a nuclear detonation. AKA Dirty Bomb

EXPLOSIVE RDD (DIRTY BOMB)

EXPLOSIVE RDD AKA DIRTY BOMB (CONT.)

- Greater dispersal of radioactivity
- Associated traumatic injuries
- Presence of radiation will substantially complicate initial triage and treatment
- Major health hazard could exist for a few city blocks
- Monitoring and area control important
- Radioactive material
- Detonator
- Conventional explosive (e.g.fertilizer, semtex)

CONTAMINATED VICTIMS

- Contamination on radiological victims is not usually immediately life threating to hospital personnel (except imbedded radioactive shrapnel)
- Removing a patient's clothes, removes 80% to 90% of the contamination
- ***Do NOT delay medical treatment for victims with life or limb-threatening injuries to conduct decontamination!***

DECONTAMINATION

DECON CONT

- Once patient unclothed, place clothing in a sealed container to prevent spread.
- Use tepid water and a neutral pH soap unless is a dry chemical that reacts violently with water

CONTINUED RESPONSE

RECOVERY

- Resupply
- Recount (Debrief)
- Recuperate (mental health)
- Rebuild (community and surrounding areas)

ALABAMA IS IN "DIXIE" TORNADO ALLEY

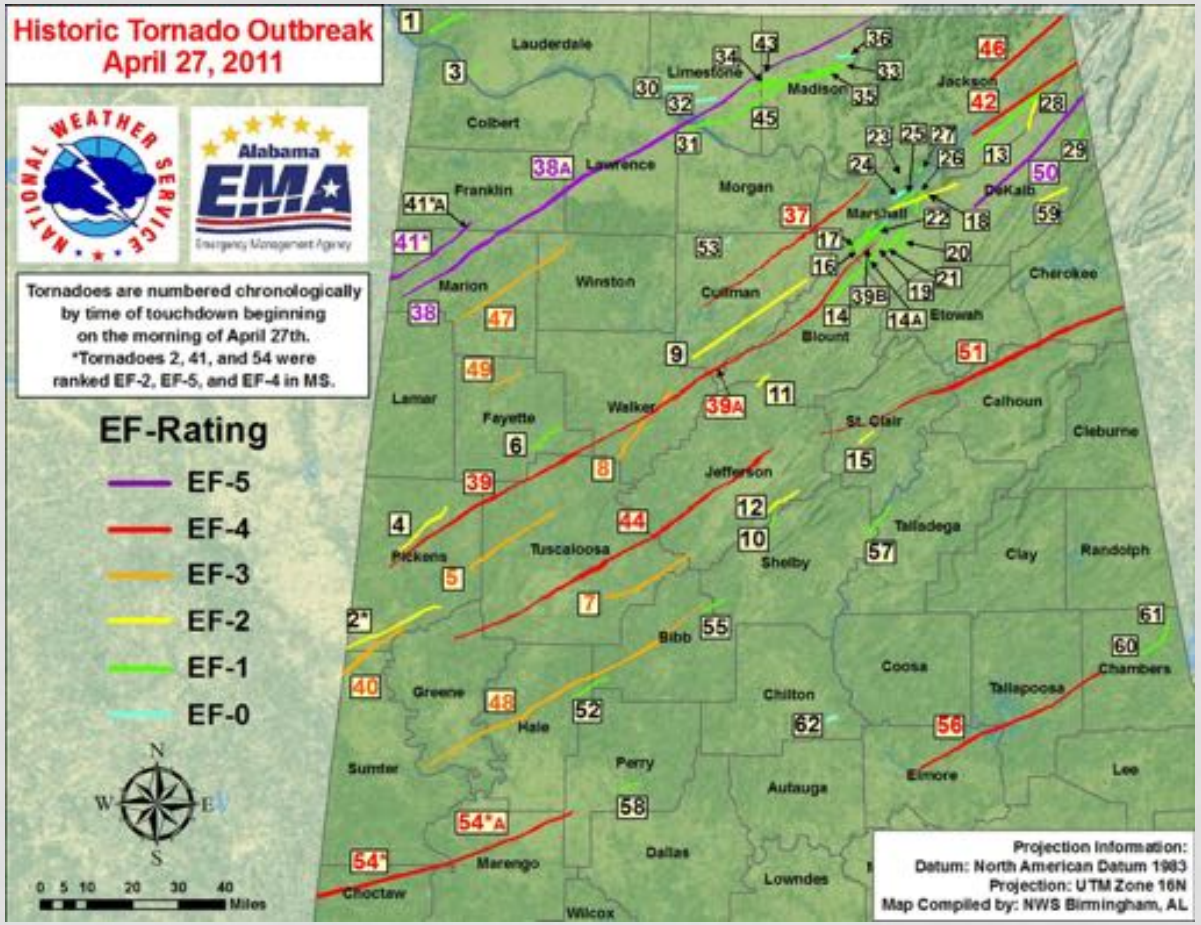
- Alabama, especially North and Central Alabama are at a much higher risk for seeing regular and strong tornadoes

APRIL 27, 2011

- Historic tornado outbreak in the Southeastern United states and Alabama has one of its worst outbreaks in the history of the state

- 62 tornadoes statewide
- 29 tornadoes in Central Alabama
- Nearly 2000 people injured and 238 fatalities

TORNADO TRACKS 4/27/2011



DCH Regional Medical Center

View from UAB Hospital's Helipad

DOWNTOWN BIRMINGHAM

Hospital Experience

- DCH (Tuscaloosa)
  - 900 Total Patients
  - Used 6 alternative care sites throughout hospital
  - Utilized volunteers
- UAB (Birmingham)
  - 340 Patients
  - 41 of those=Level 1 Trauma
  - Utilized Satellite ICU's
  - Overstaffed in some areas/understaffed in others

TORNADO PATH

UED AND UAB EMERGENCY PROCEDURES

- Follows NIMS protocols and structure
- Designed for enough supplies and food for approx 4 days without need for resupply

- Once a possible Emergency is identified, the ANM of the UED coordinates with the UED attendings on shift and/or the trauma attending to prepare for the influx of patients

- The UED medical director and Administrator on call are then alerted and comes to the ED

- In addition to the administrator on call, may other services may be called in to assist with continued operations
  - Food services
  - Supply chain
  - Custodial staff
  - Additional physicians, pharmacists, nurses, transporters, radiology techs, etc.

- Depending on the size of the event a departmental or hospital wide page may be sent asking for additional manpower

- A CODE Yellow is called and the degree of response attempts to match the expected patient volume
  - Code Yellow Level 1 – number of expected patients matches capacity of ED (no significant change to operations)
  - Code Yellow Level 2 – 2x ED capacity(change in ED flow pattern and extra resources likely required)
  - Code Yellow Level 3 – 3x ED capacity (Could possibly open secondary triage and treatment sites such as Russell Clinic)

JOB ACTION SHEETS

Casualty Care Emergency Physician

Role: Casualty Care Emergency Physician (POD 3/Senior Attending)

Mission: Consult with Casualty Care Trauma Surgeon and act as Casualty Car Emergency Physician. Call Code Yellow in Coordination with Charge Nurse. Hold pre-incident briefing with UED staff and disperse job action sheets and assign roles

Position Reports to: **Hospital Incident Commander**		Command Location:
Position Contact Information: Phone: ( ) -		Radio Channel:
Hospital Command Center (HCC): Phone: ( ) - ( ) -		Fax:
Position Assigned to:	Date: / /	Start: ___:___ hrs.
Signature:	Initials:	End: ___:___ hrs.
Position Assigned to:	Date: / /	Start: ___:___ hrs.
Signature:	Initials:	End: ___:___ hrs.
Position Assigned to:	Date: / /	Start: ___:___ hrs.
Signature:	Initials:	End: ___:___ hrs.

Immediate Response (0 – 2 hours)	Time	Initial
Receive appointment • Notification of MCI		
Assess the operational situation • Obtain incident information • Type of incident • Consider Hazards • Number of patients expected; continual updates from scene IC • ETA • Pull MCI charts to prepare ED configuration		
Activities • Coordinate ED and Trauma response in conjunction with Casualty Care Trauma Surgeon and Casualty Care Unit Leader at central location near trauma bay • Obtain pertinent documents from UAB Hospital Emergency Response Plan • University Emergency Department Mass Casualty Incident EPP#248 • Setup PODS according to expected Level (I, II, III) • Collaborate w/Trauma attending to determine ability to handle incoming patient surge • Determine activation of Level I, II, or III		
• Notify Emergency Services Medical Director of Code Yellow • Notify ED leadership and alert of incident / call in additional staff if event should require • Assign ED physician roles (attendings and residents) • Ensure off service rotator residents are evenly allocated between all UED treatment areas and assign them specific care duties • Keep in constant contact with ED pods and triage areas to determine if further escalation of response needed • Coordinate with ED leadership and nurse manager about opening additional treatment site if warranted • Coordinate MCI supply delivery (airway cart, central lines, Tourniquets, Gauze, ACE bandages, Chest Tubes, Large bore IV catheters, wound care supplies, blood products, IVFs), MCI packet delivery, Disaster cart delivery, and resource allocation to each Pod with the Nurse Manager • Coordinate and direct need for advanced imaging (i.e. CT scans, MRIs) • Maintain Contact with the Command Center for the duration of the incident		
Documentation • HICS 206: Assist the Logistics Section Support Branch Director with completion of Staff Medical Plan • HICS 213: Document all communications on a General Message Form • HICS 214: Document all key activities, actions, and decisions in an Activity Log on a continual basis		
Communication *ospital to complete: Insert communications technology, instructions for use and protocols for interface with external partners*		

Intermediate Response (2 – 12 hours)	Time	Initial
Activities • All arriving physicians should check in with the Casualty Care Emergency Physician and receive their assignments • Coordinate with Casualty Care Unit Leader about supply levels and further acquisition of needed resources • Coordinate with arriving ED leadership and Emergency Management I.E more appropriate physician arrives to take over Casualty Care Emergency Physician role, then current Casualty Care Emergency Physician will be assigned a new role by oncoming Casualty Care Emergency Physician. • Direct "delayed trauma" and medical patient movement/flow out of department in conjunction with ED Immediate Care Physician		
Documentation • HICS 213: Document all communications on a General Message Form • HICS 214: Document all key activities, actions, and decisions in an Activity Log on a continual basis		

JOB ACTION SHEET
POD 2 ATTENDING

ED Immediate Care Physician (Immediate treatment area physician)

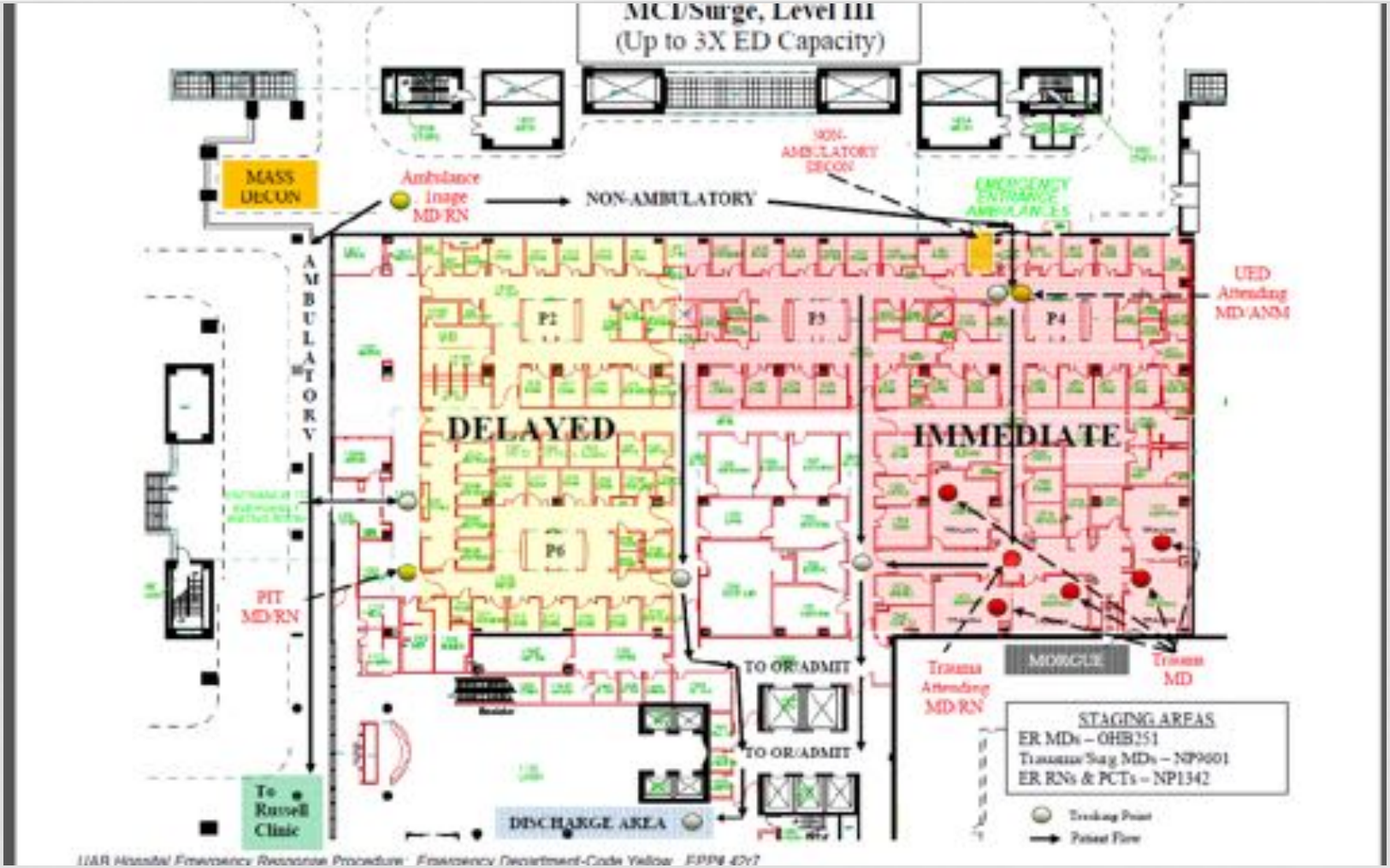
Role: Oversees Patient Care (POD 2 Attending)

Mission: Work with the Nursing Shift Lead. Take ED Census, DC all non critical patients, move boarding patients upstairs, Supervise Primary Patient Care by UED Residents

Position Reports to: **Casualty Care Emergency Physician** Command Location:		
Position Contact Information: Phone: ( ) - Radio Channel:		
Hospital Command Center (HCC): Phone: ( ) - ( ) - Fax:		
Position Assigned to:	Date: / /	Start: ___:___ hrs.
Signature:	Initials:	End: ___:___ hrs.
Position Assigned to:	Date: / /	Start: ___:___ hrs.
Signature:	Initials:	End: ___:___ hrs.
Position Assigned to:	Date: / /	Start: ___:___ hrs.
Signature:	Initials:	End: ___:___ hrs.

Immediate Response (0 – 2 hours)	Time	Initial
Receive appointment • Appointed by Casualty Care Emergency Physician		
Assess the operational situation • Screenshot ED All Beds Tab and Take Census of all ED Patients • Evaluate all current patients in the UED and discharge all non critical patients.		
Activities • Expedite movement to the floor and the ICU of existing critical patients • Contact Inpatient MICU / Internal Medicine Attendings and instruct them to assume care of all boarding UED pts that are unable to be moved • Evenly allocate UED medical / APP students between treatment areas and instruct them in ways they can be helpful (moving patients, cleansing wounds, wound repair, direct pressure, tourniquet / neurovascular checks, bagging) • Brief Pod 2 - 4 Residents on the basics of MCI care and appropriate resource utilization • Supervise patient care by the UED residents in Pods 2 - 4		
Documentation • HICS 206: Assist the Logistics Section Support Branch Director with completion of Staff Medical Plan • HICS 213: Document all communications on a General Message Form		

LEVEL 3 PATIENT FLOW



WHAT IF THE EVENT LASTS MORE THAN JUST A FEW HOURS?

- As the event looks to prolong into more hours to days with respect to duration, emergency measures such as below could be undertaken:
  - Water supply is designed to last 4 days, back up bottled water supplies are available
  - Food services can fully supply the hospital for 3-4 days, if needed will begin to ration food and commandeer food from on campus vending machines
  - Linens services will handle capacity as long as possible until required to limit water usage and then services will be at minimum

- As a last resort the water supply would require conservation by limiting flushing of toilets
  - If it's yellow then let it mellow and if it it's brown…….bag it up!!!

REFERENCES AND RESOURCES

- https://www.weather.gov/bmx/event_04272011
- https://www.ndlsf.org/bdls
- https://www.cdc.gov/nceh/radiation/emergencies/index.htm
- https://www.wmpllc.org/ojs/index.php/ajdm/index
- https://www.mayoclinic.org/medical-professionals/trauma/news/mass-casualty-triage-guidelines-revised/mac-20512735
- FEMA
  - https://training.fema.gov/nims/
- Center for Disaster Preparedness
  - https://cdp.dhs.gov

QUESTIONS?

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