

Planning & Triage

MODULE 3

At 0030, July 20, 2012

A gunman dressed in black gear walks into the back exit door of the Aurora Mall Century 16 midnight showing of *Batman: The Dark Knight Rises*, throws 2 gas canisters in the aisles and opens fire.

70 people are injured.

12 would die.





Boston Marathon Bombing

April 15, 2013 at 2:49pm

2 bombs, 12 seconds apart.

264 injured.

3 dead.

Patients sent to 8 hospitals.

What Boston Hospitals Learned from Israel

Key advances in trauma medicine from terror attacks

Minutes after a terrorist attack killed three at the finish line of the Boston Marathon, doctors and nurses at the city's hospitals faced severed limbs, burned bodies, shrapne

For Boston doctors, the challenge was unprecedented — but the

Before Marathon Bombings, Aurora Helped Boston Prepare

▶ Listen

+ Queue

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Aug 27, 2013

Lessons From Military Surgeries Informed Treatment of Boston Victims

New York Times

BOSTON — For years, Dr. Michael J. Weaver, an orthopedic trauma surgeon, went to meetings of his professional society and heard surgeons from the military describe what they had learned treating blast

PLANNING

“By failing to prepare, you are preparing to fail”

Benjamin Franklin

OBJECTIVES

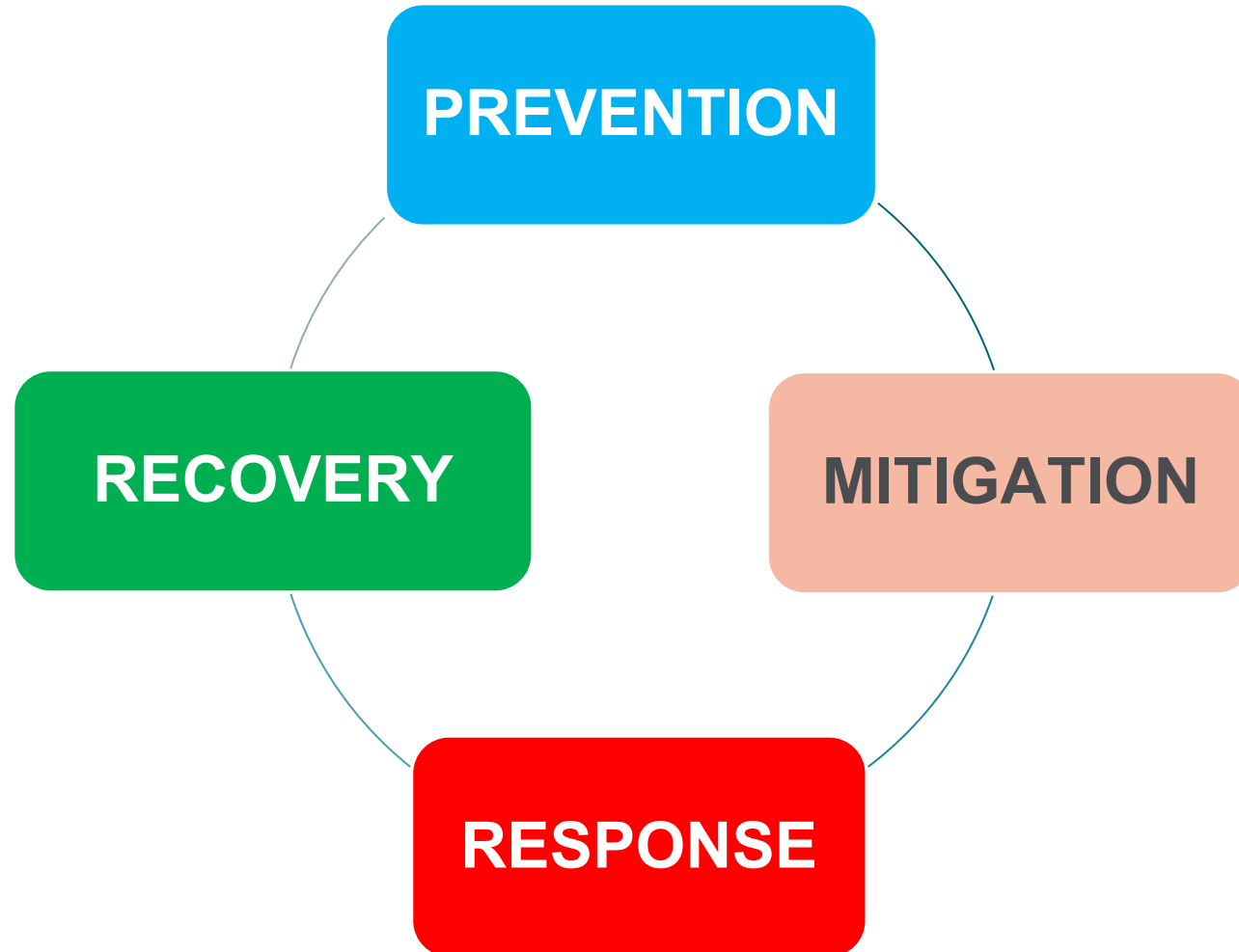
- Discuss the components of disaster planning
- Review the levels of planning
- Discuss the emergency response and organization needed for mass casualty incidents (MCI)
- Learn about START and jumpSTART triage algorithms
- Understand basic hospital response in MCI

PLANNING IS A PROCESS

Defines the **aims and purposes**, and the **strategies** and **actions** necessary to achieve the aims by using available **resources** and filling gaps.



PLANNING PHASES & OBJECTIVES



KEY PLANNING CONCEPTS

CLEAR

- Simple wording
- No room for misinterpretation

CONCISE

- Able to be read quickly

COMPLETE

- Include all necessary components

KNOWN

- Distribute the plan

EMERGENCY PLAN: SPECIFIC COMPONENTS

- Incident command
- Information management
- Risk assessment
- Objectives and goals
- Organization
- Roles and responsibilities
- Communication and coordination
- Resources
- Training



BASIC COMPONENTS OF EMERGENCY PLANNING



- Risk assessment and vulnerability analysis
- Assessment of existing response system, operative capacity
- Identify partners
- Resource availability

EMERGENCY PLAN: RISK ASSESSMENT



Fire and smoke the sky on the intersection at Hokiokio Place and Lahaina Bypass in Maui, Hawaii, on Tuesday, Aug. 8, 2023. Zeke Kalua / AP

Threat analysis

- Natural
- Man-made
- Contamination
- Secondary hazards

RISKS ASSESSMENT

- Damage to infrastructure
- Breakdown in security
- Breakdown in essential services
- Loss of property
- Injury
- Disease (mental and physical)
- Dead and missing
- Displaced populations



VULNERABILITIES

- Access to health care
- Access to safe water
- Access to sanitation
- Access to adequate housing
- Access to regular source of income
- Under 5 malnutrition & mortality
- Female literacy rates
- Measles vaccination coverage



EMERGENCY PLAN: OBJECTIVES & RESOURCES



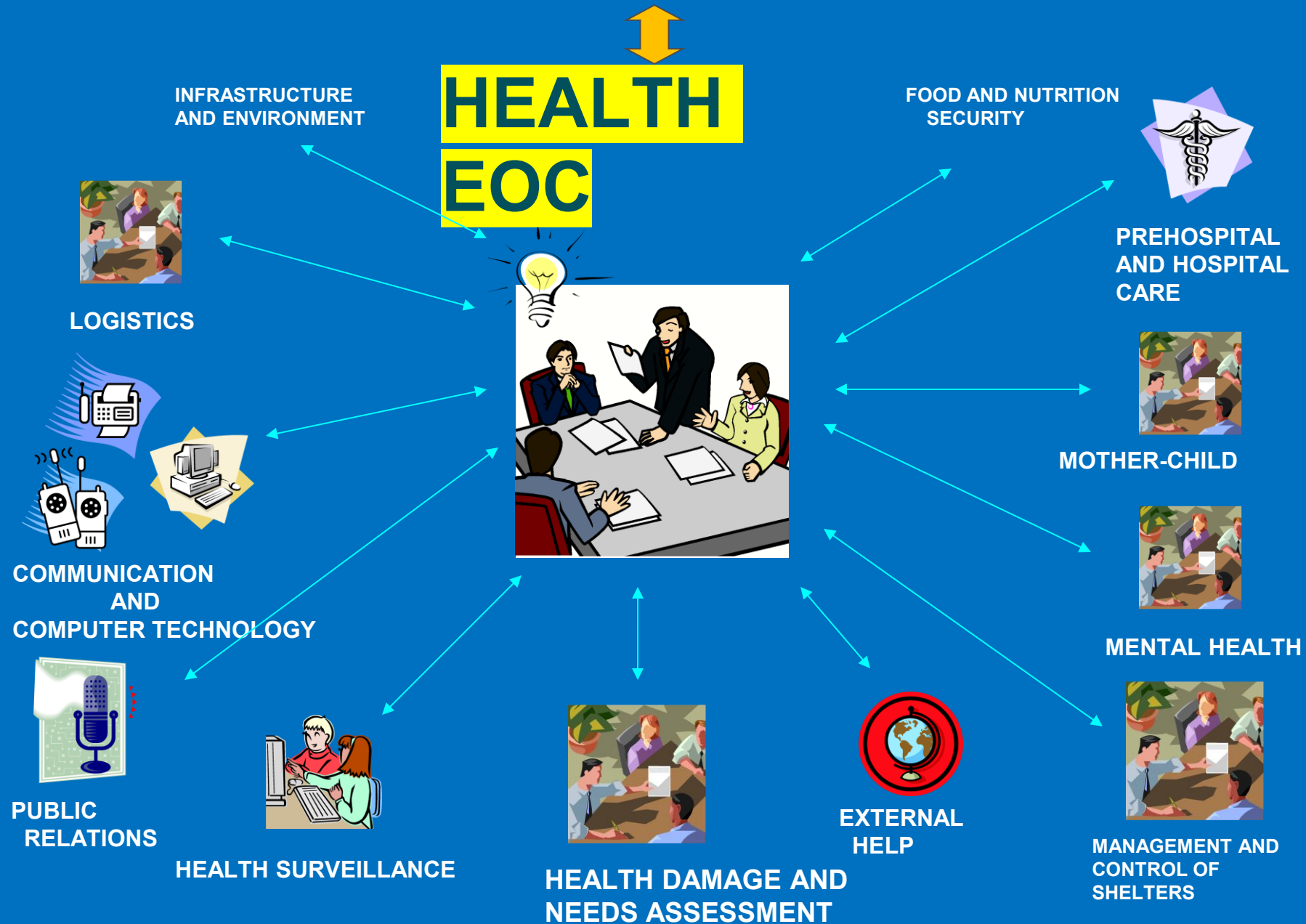
- Priorities
- Feasibility
- Operative capacity
 - Human resources
 - Infrastructure and equipment
 - Critical supplies

EMERGENCY PLAN: ORGANIZATION

- Emergency Operations Committee (EOC)
- Plan activation
- Hierarchy of authority
- Roles and responsibilities
- Multi-sector participation
- Communication coordination
- Media relations
- Community Involvement



MULTISECTOR INVOLVEMENT



EMERGENCY PLAN: ROLE ASSIGNMENTS



- Who does what?
- When?
- How?
- With what?

EMERGENCY PLAN: TRAINING



EMERGENCY PLAN: TRAINING

- Utilize and test knowledge of basic concepts
- Identify gaps
- Target group
- Simulation
- Repetition



PLANNING LEVELS

NON-GOVERNMENTAL

- FAMILY
- SCHOOLS
- SHELTERS
- CLINICS
- HOSPITALS



GOVERNMENT

- LOCAL
- REGIONAL
- NATIONAL



THE PEDIATRICIAN'S ROLE

- Preparedness and risk reduction
- Disaster response participant
- Specialist input
- Awareness of local emergency plans
- Advocacy

CHALLENGES

- State of social behavior
- Unknown hazards or vulnerabilities
- Response capability
- Lack of resources
- Damage and disruption
- Communication failures



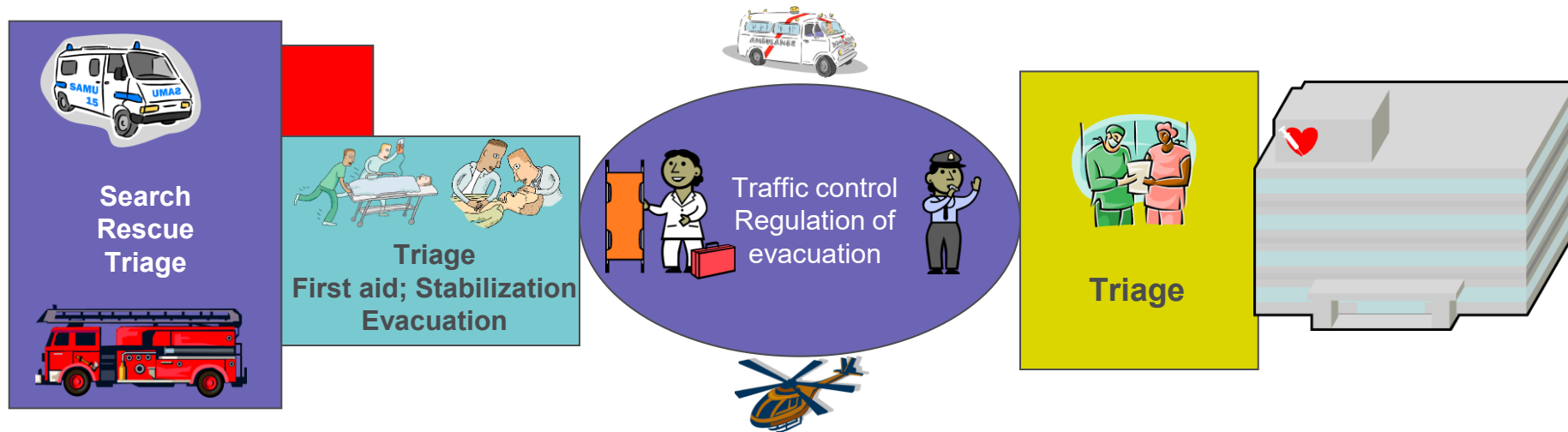
Mass Casualty Management & Triage



MASS CASUALTY MANAGEMENT SYSTEM

- Adequate response to mass casualty incidents (MCI)
- Preparation, response, communication
- Pre-established procedures for:
 - Resource mobilization
 - Field activities
 - Coordinated reception at hospitals
- Based on specific training of responders
- Avoid system and function overlapping

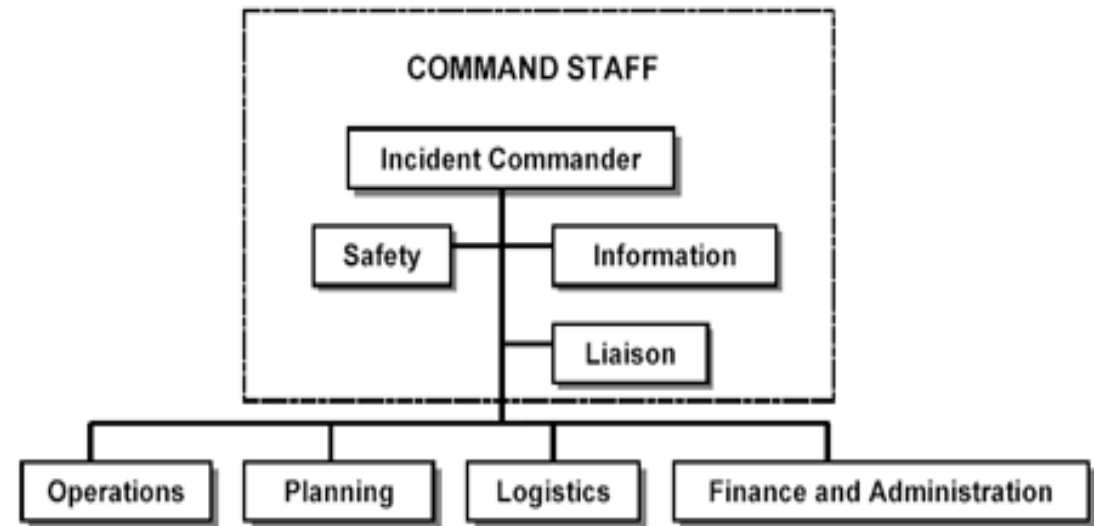
MASS CASUALTY MANAGEMENT SYSTEM



Multi-sector rescue chain

INCIDENT COMMAND SYSTEM

- List of needed positions with specific tasks
- Create task Check Lists for each person/position
- Each person may need to undertake more than one task



TASK ASSIGNMENTS



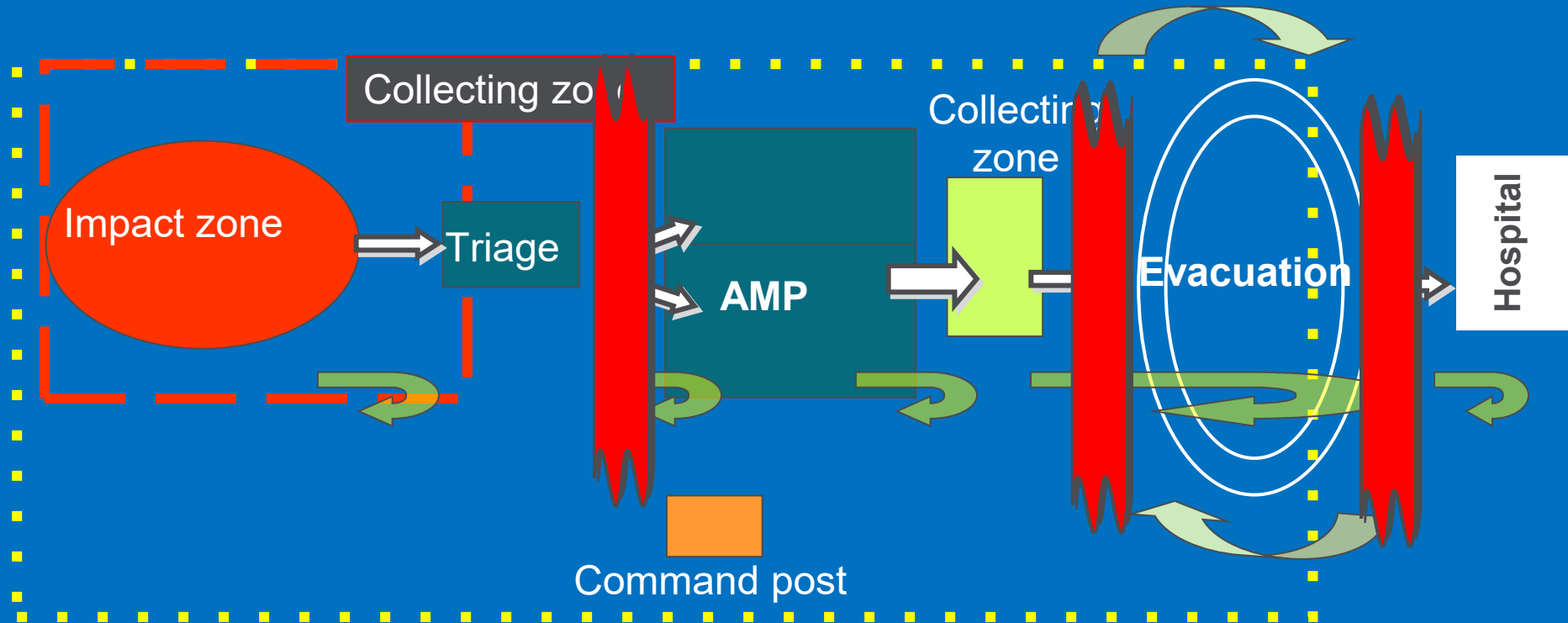
- Command Post – on-site
- Search and Rescue – on-site
- Triage – on-site
- Treatment Areas – on-site
Advanced Medical Post
- Transportation / Evacuation
- Hospital – Triage and Treatment Areas

SCENE ASSESSMENT

- Is the scene safe and can a Command Post be established?
- Do we have Personal Protective Equipment (PPE)?
- Are there available supplies for an Advanced Medical Post?
- How many patients need to be evacuated?
- What other resources are necessary?
- Has the Emergency Medical Service been notified?



ORGANIZATION AT THE DISASTER SITE



Access

- Strictly restricted
- Restricted / reserved

Patient flow

Transport resource flow

("conveyor belt" management)

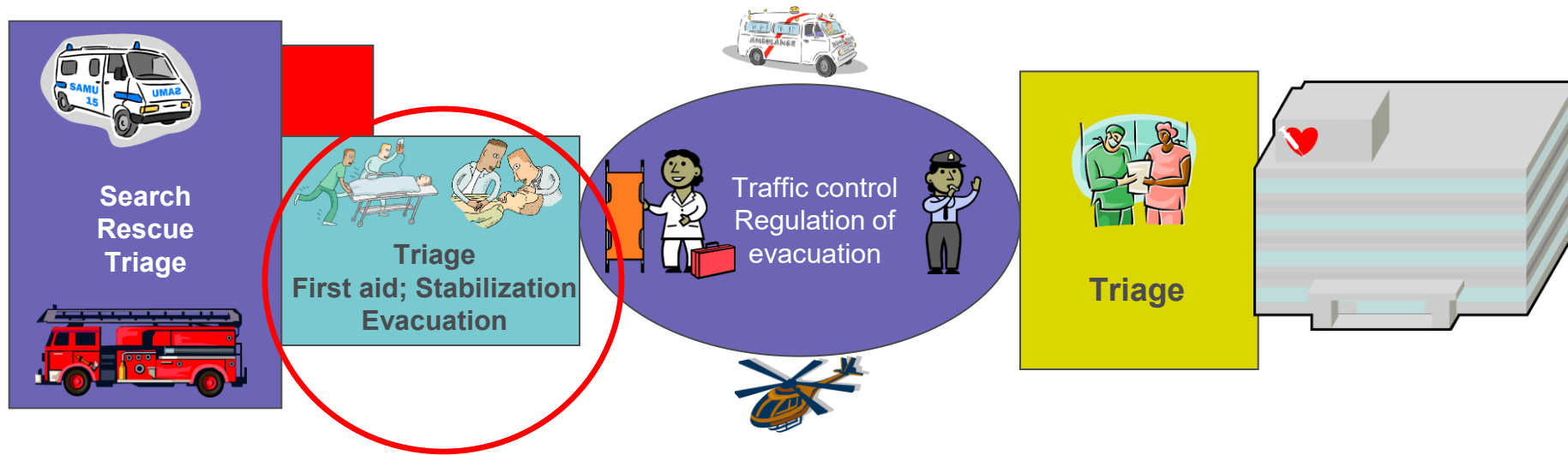
**FIELD MASS CASUALTY
MANAGEMENT**

RESCUE & SECURITY ON-SCENE

- Most physicians are not trained for on-scene rescue... Let the experts do it!
- Risks for the rescuer
 - Structural instability/ collapse
 - Fire, carbon monoxide, cyanide
 - Dirty, chemical (neurotoxic) bombs, radiation
 - Blood exposure

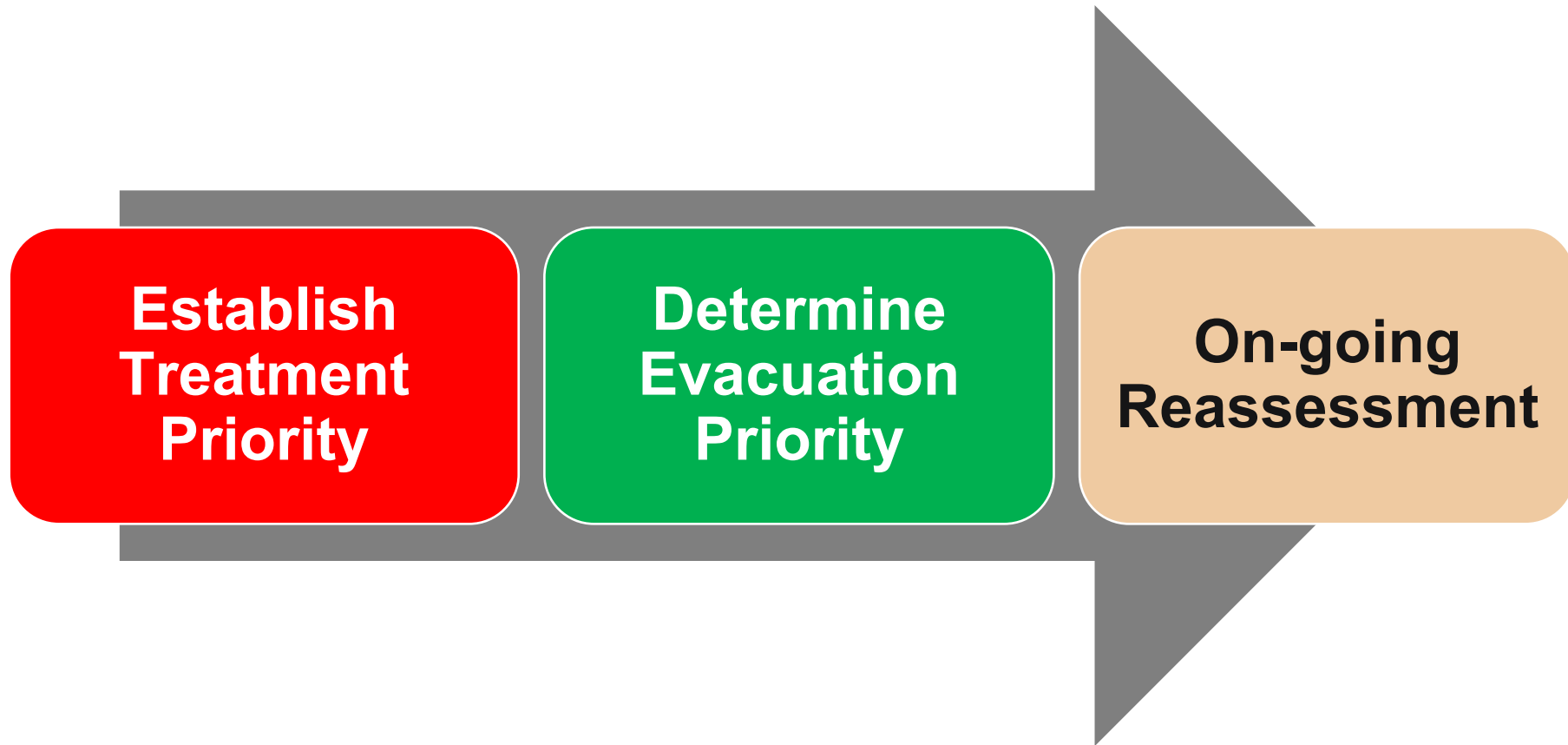


TRIAGE AND STABILIZATION



Multi-sector rescue chain

ON-SITE TRIAGE IN MCI : GOALS



TRIAGE

Needs >>> **resources**

- Necessity of categorization to ensure the greatest good to the greatest number
- Ensures most efficient use of limited resources
- Quick and limited assessment of victims
 - Determine priority of treatment for survivable injuries
 - “Golden hour” vs. “The 10 platinum minutes”
- Primary triage concerned only with clinical condition regardless of age

TRIAGE

- Emotional and psychological stress can be confused with medical disease
- START (Simple Triage and Rapid Treatment): focus on objective signs in patients > 8 yrs
- Psychologically affected casualties triaged as “minimal”
- Unique issues with children

START TRIAGE

Classification Categories

Green or “minimal”

“Walking wounded” – Victims who can relocate on their own

Yellow or “delayed”

Injured who are not able to relocate on their own

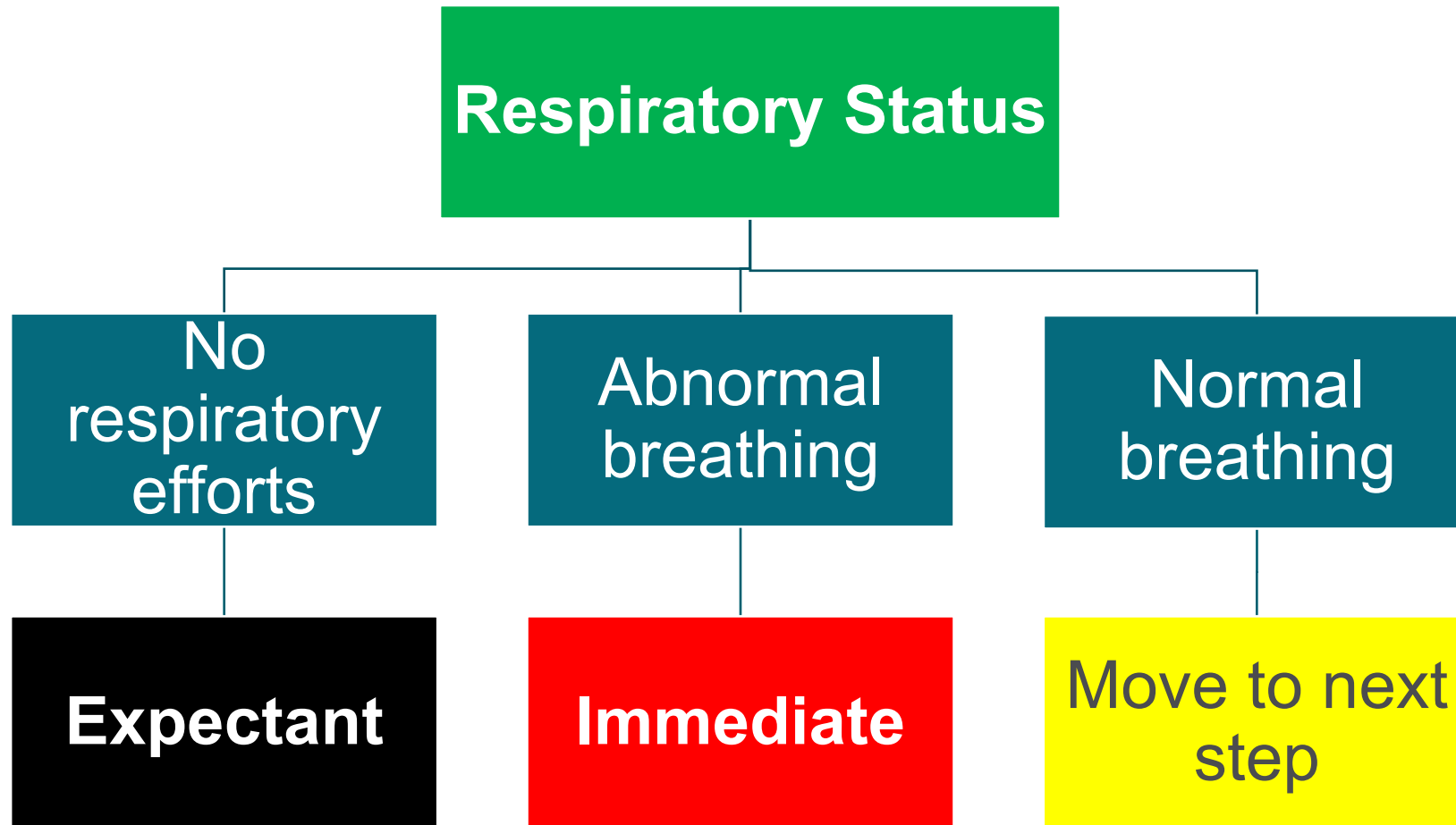
Red or “immediate”

Injured who need immediate attention or evacuation

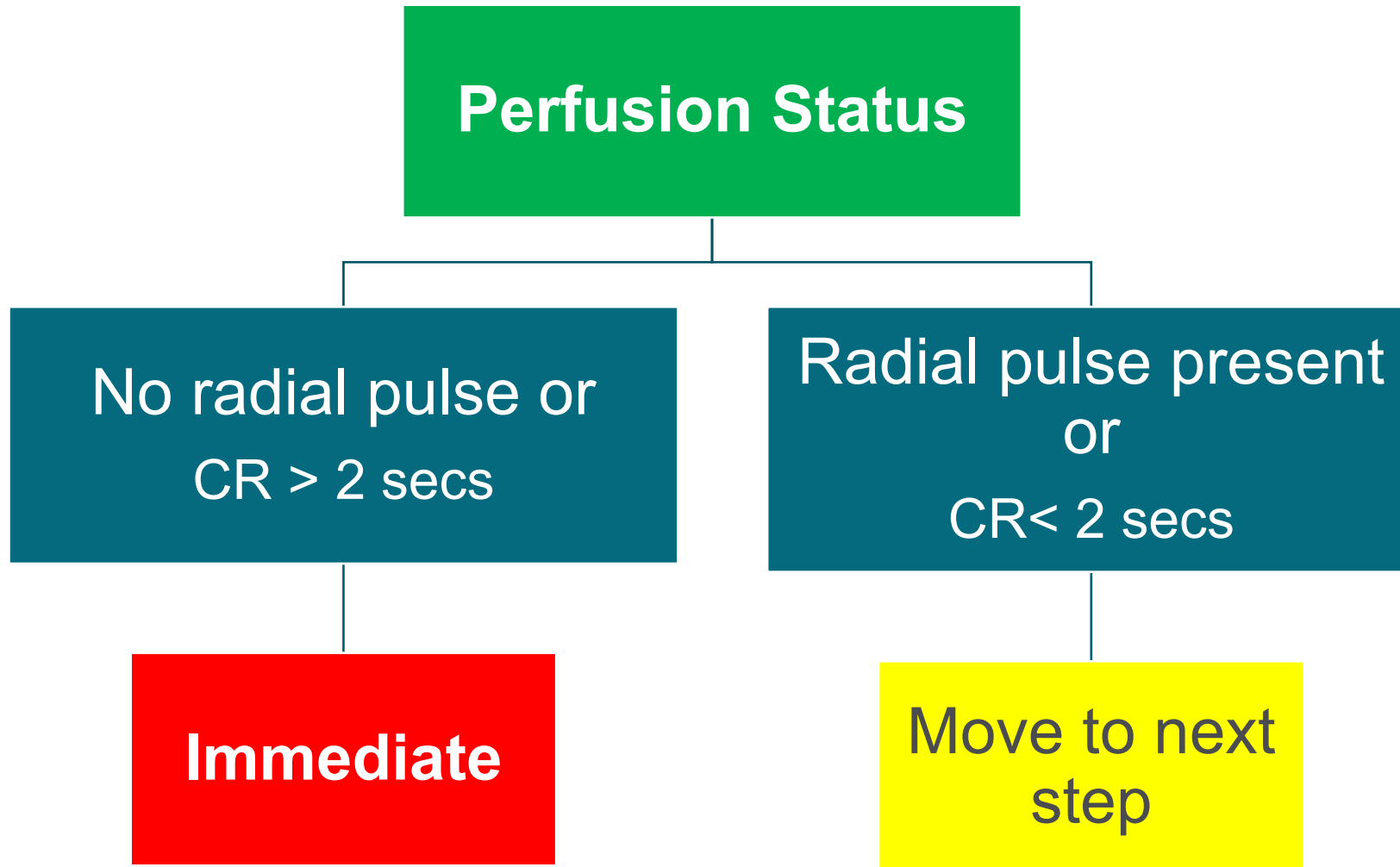
Black or “expectant”

Cannot be saved

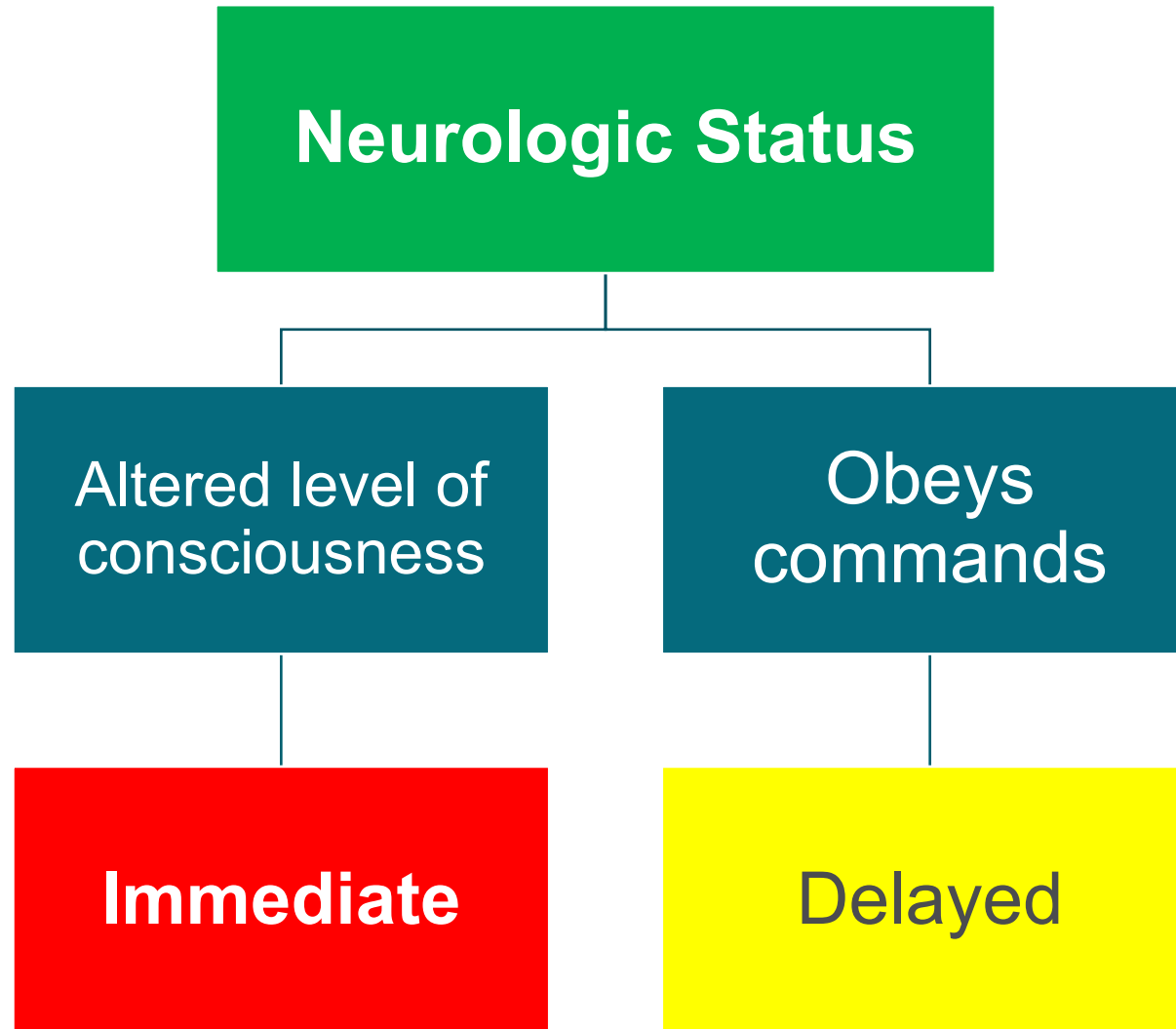
START Triage



START Triage



START Triage



TRIAGE CATEGORIES

Patient Status	START/SALT	Military / International	Color Code	Priority
Critical	Immediate	Immediate	Red	1
Stable	Urgent / Delayed	Delayed	Yellow	2
Good	Minimal	Minimal	Green	3
Deceased	Expectant	Expectant	Black	4
	Dead			
Contaminated				



START: POTENTIAL PROBLEMS WITH CHILDREN

- Apnea: A primary respiratory problem?
- Perfusion maintained: The child may be saved
- Respiratory rate cut-off of 30 is too low
- Capillary refill: Not useful in cold environments
- Response to orders: Not useful in young children

TRIAGE IN CHILDREN

- Pediatric triage system **JumpSTART®**
- Similar to START algorithm

DIFFERENCES

- Decisions are based on physiological criteria with normal pediatric ranges
- Identifies the apneic child who still has some degree of perfusion, before an irreversible cardiac injury secondary to anoxia develops

JumpSTART[®]

Categories

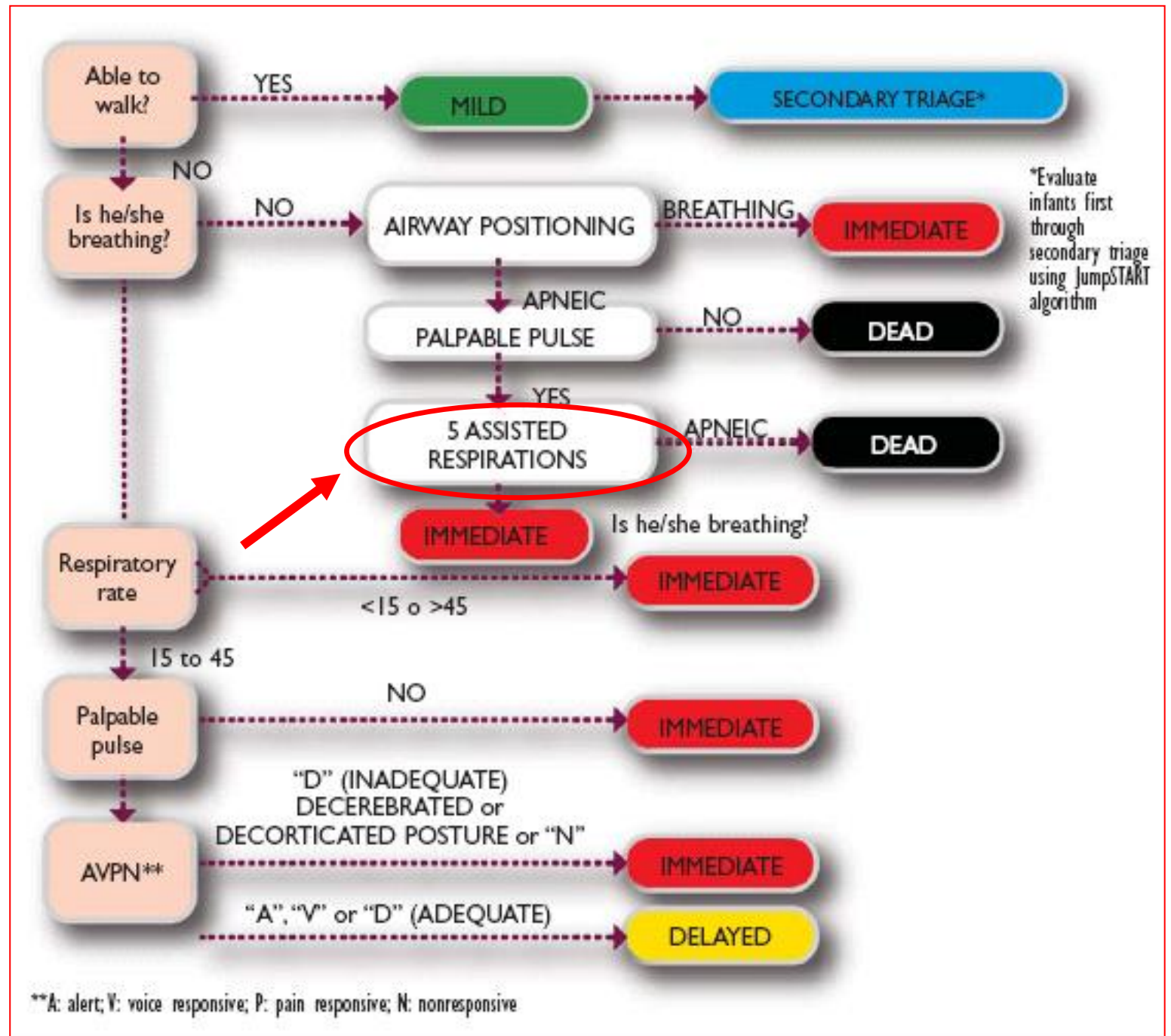
Minimal: Able to walk

Delayed: Respiratory rate (RR): 15-45 *and* alert or responsive to voice.

Immediate: RR <15 or >45 after airway positioning and/or 5 rescue ventilations *and* pulse present

Deceased: No breathing or pulse after airway repositioning & rescue ventilation

JumpSTART[®]



MODIFICATION: CHILDREN WHO DO NOT WALK

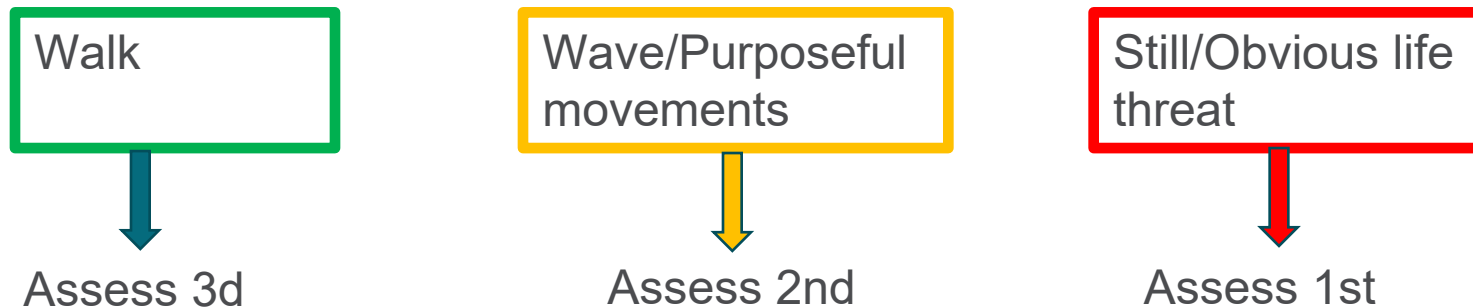
All non-ambulatory, young children should be assessed first by the medical staff and triaged at least initially as **YELLOW**.



SALT Triage Algorithm

Sort, **A**ssess, **L**ife-saving intervention, **T**reatment/**T**ransport

Step 1: Global Sorting

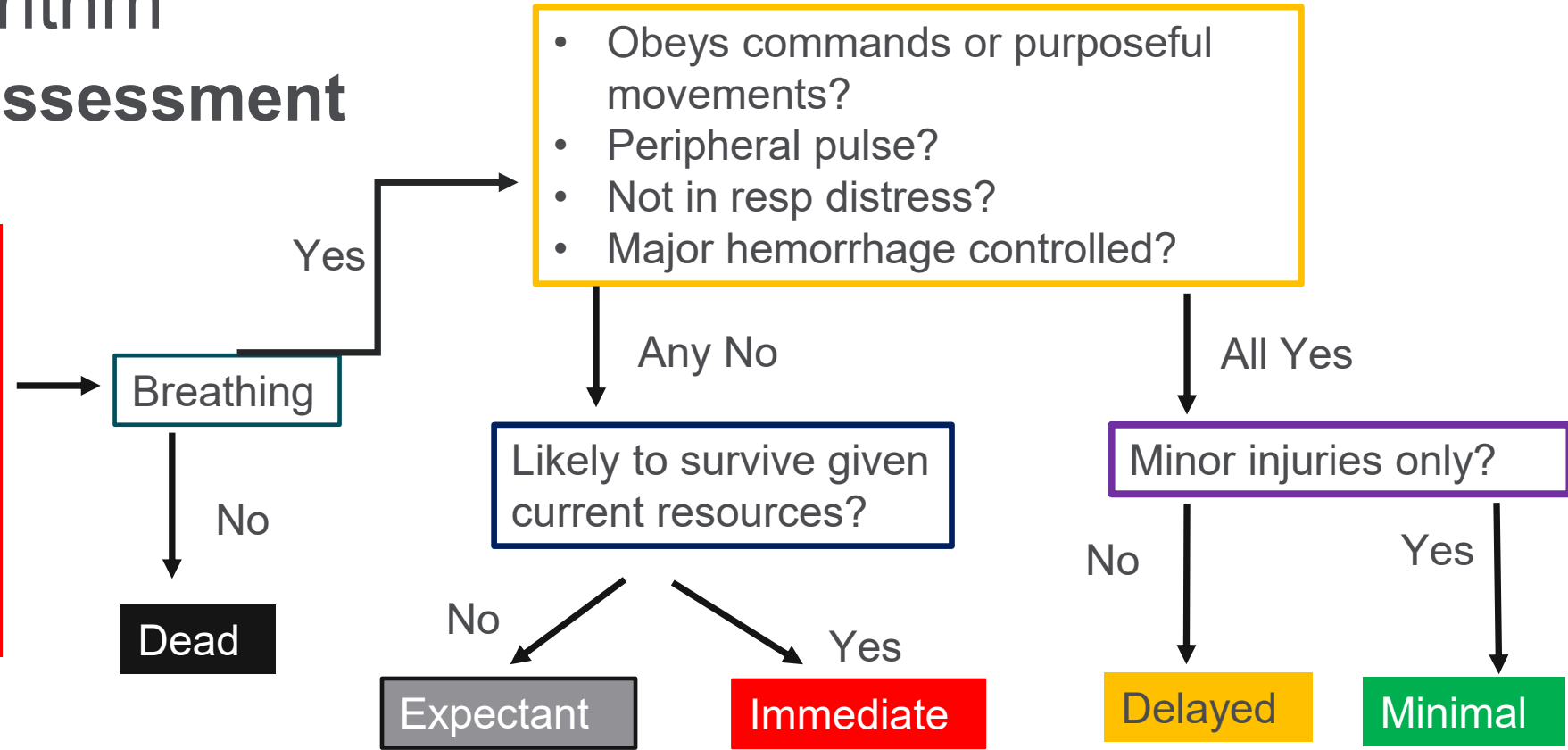


SALT Triage Algorithm

Step 2: Individual assessment

Life saving interventions:

- Hemorrhage control
- Open airway (if child, consider 2 rescue breaths)
- Chest decompression
- Auto-injector antidotes



TRIAGE IN MCI

- On-site Triage

- Classify victims on-site, in the casualty collecting point
- If personnel do not have experience in MCI, use only two categories:
Acute (Yellow & Red) & Not Acute (Green & Black)

- On-site Evacuation Triage

- Classifies victims in terms of their priority for transportation to a hospital that can receive them

- Medical Triage

- Determines the required level of care

ROLES OF THE ADVANCED MEDICAL POST

3 T's Principle

Triage Treat Transport

TRANSPORT OF VICTIMS

- Control number and destination to avoid overwhelming hospitals
- Medical officer in Incident Command or AMP:
 - Receives data about patient status
 - Contacts hospitals
 - Confirms there is space available in the hospital
 - Notifies transport



TRANSPORT OF VICTIMS



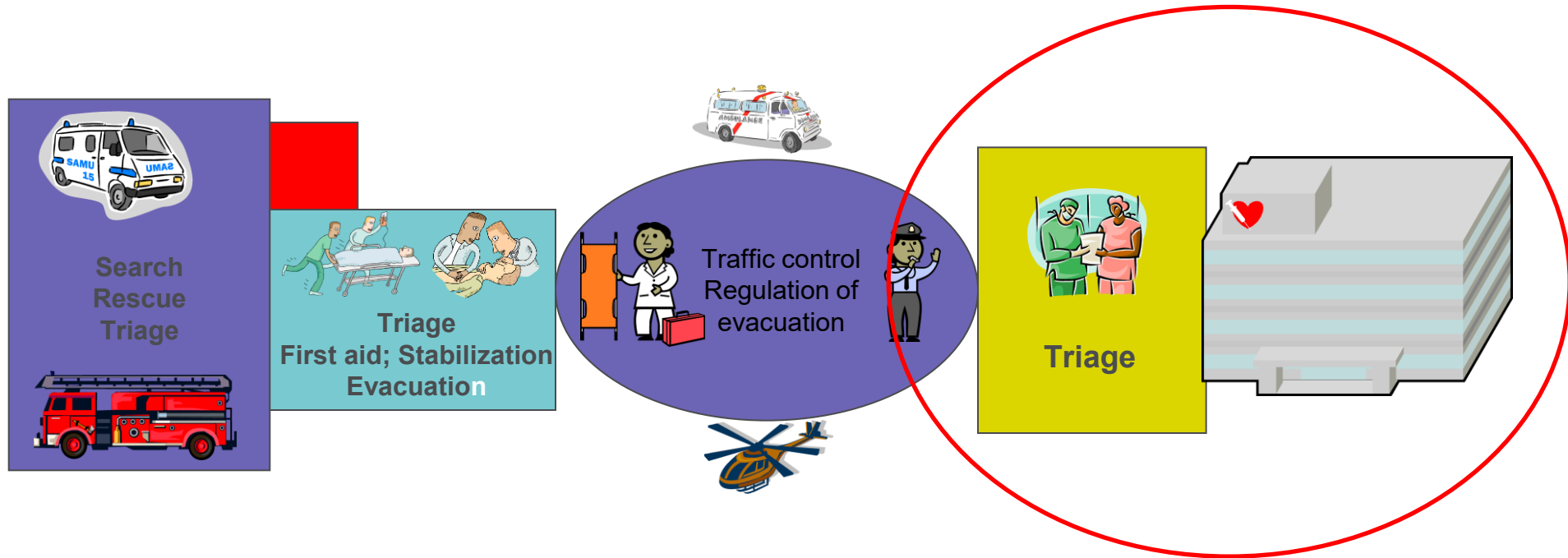
- Evacuation Post:
 - Assess the patient's stability
 - Evaluates the security of the equipment
 - Records patient's data
- Use the “Noria” principle
- Hospital:
 - Constant monitoring of space availability

PATIENT TRANSPORT

- **Immediate:** Transported from the scene by ambulance or helicopter to a trauma center, if available
- **Delayed:** By ambulance to other emergency facility
- **Minimal:** Limited to on-site management, can be transferred to a more distant health care center, if necessary
- **Deceased:** To the morgue (hospital)



HOSPITAL ORGANIZATION



Multi-sector rescue chain

HOSPITAL: PATIENT RECEPTION

- Prepare areas
 - Reception and triage
 - Decontamination
 - Treatment
- Determine capacity and surge capacity in:
 - Emergency Department
 - Trauma rooms
 - Surgery
 - Critical care unit
- Assess available resources



PREPARING FOR PATIENT INFLUX

- Assume that health care will rely upon local resources
- Activate the hospital emergency plan
 - Notification and activation of chain command (HICS)
 - Safety
 - Prepare areas and increase availability
 - Prepare decontamination and isolation procedures, if needed
 - Assess available resources (personnel, blood, drugs, communications)
 - Agreements for referral to other hospitals
 - Information center for press, families
- Frequent drills

HOSPITAL TRIAGE IN AN MCI

- Use a triage system that parallels normal routine
- Practice regularly
- Triage is a continuous process
- Re-triage all victims transported by EMS
- Set up triage area near the ED entrance
 - Shielded and secure
 - Readily accessible

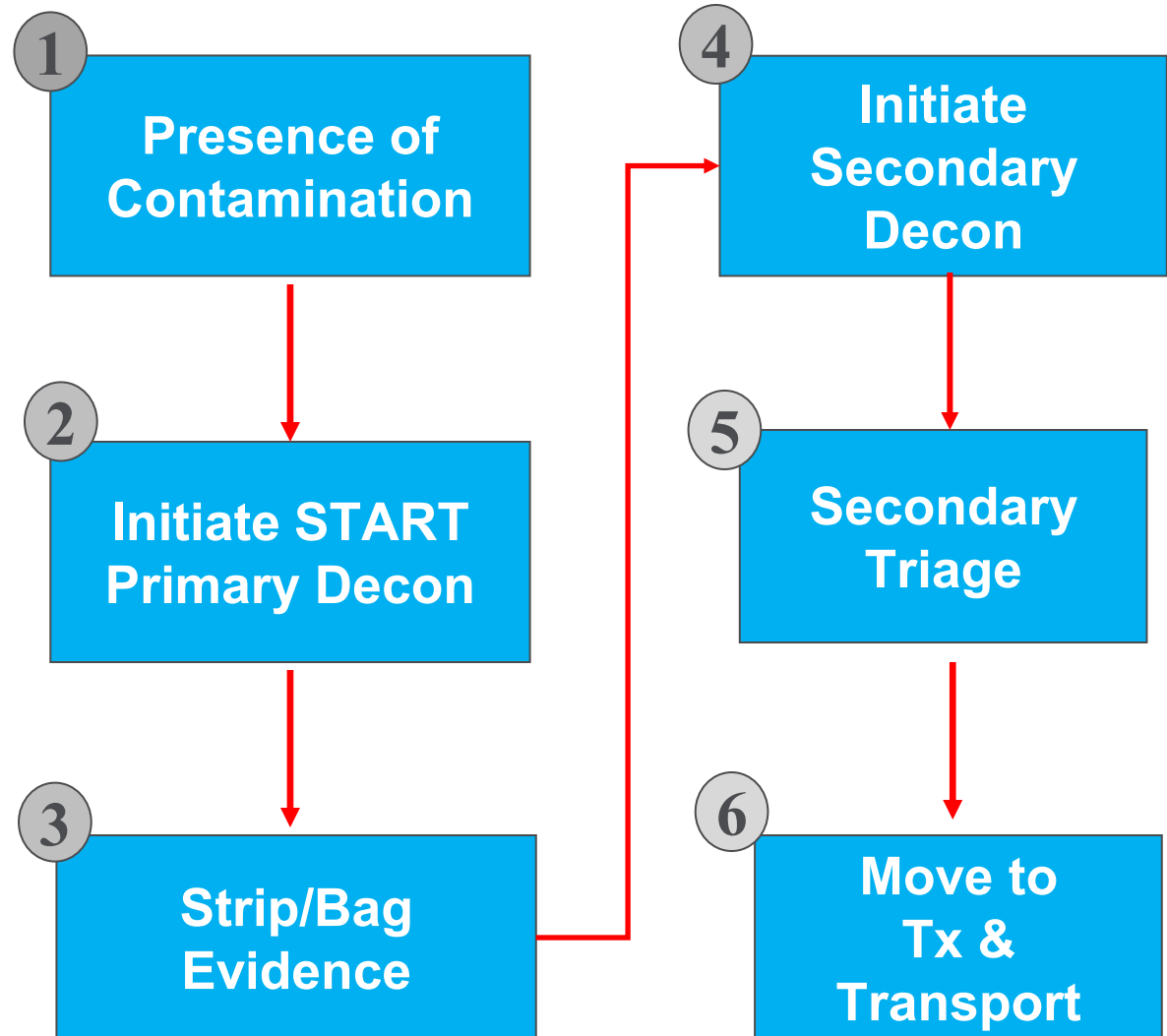


MEDICAL TRIAGE



- **Red:** Require immediate stabilization, may need emergent operative intervention and ICU
- **Yellow:** Care can be delayed, but close monitoring required, observation or admission
- **Green:** Delayed care or no treatment or referral
- **Black:** Deceased

HAZMAT CONSIDERATIONS



SUMMARY

Disaster preparedness through planning at all levels

Accomplish the greatest good for the greatest number

Triage: simplified sorting of casualties & to prioritize treatment

Triage is a continuous process

Special considerations for children

Documentation!!

Thank you



colorado school of
public health

UNIVERSITY OF COLORADO
COLORADO STATE UNIVERSITY
UNIVERSITY OF NORTHERN COLORADO