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# MCJCHV Trauma Criterion Inservice – EMS

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# Disclosure

- No conflicts of interest
- No disclosures
- No compensation
- All material is confidential and privileged information which is not to be discussed outside of this forum

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# Children's Hospital is an ACS Verified Level I Pediatric Trauma Center

We are 1 of 63 Children's Hospitals in the nation with Level I verification, and 1 of 2 Pediatric Trauma Centers in Tennessee.

AMERICAN COLLEGE OF SURGEONS
Verified Trauma Center

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# Who is the American College of Surgeons?

- The American College of Surgeons (ACS) is a scientific and educational association of surgeons that was founded in 1913 to improve the quality of care for surgical patients, including trauma patients, by setting high standards for surgical education and practice.
- Through its Committee on Trauma, the ACS works to improve the care of injured and critically ill patients.
  - This includes outside hospital care, Emergency Medical Service Provider Care, and Trauma Center Care.
- ACS works to encourage hospitals to upgrade their trauma care capabilities through a verification and consultation program.

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# MCJCHV TRAUMA SERVICE

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# MCJCHV Trauma Program

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# MCJCHV TRAUMA LEVELING CRITERIA

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# What is it based on and why?

Requirements from ACS

ACS identified our Level II criteria as a weakness during our 2013 consult visit

Other ACS verified Pediatric Trauma Centers

Analysis of registry data examining Injury Severity Scores and associated mechanisms of injury

To prevent severely injured children from arriving to our hospital without the necessary team members present

Evidenced based practice for presenting injury patterns and patient outcomes

ACS visit recommendations

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# Mandated ACS Criterion

- Reduction of GCS by 2 or more
- Age-specific hypotension (SBP <70mmHg = (2x age in years)
- Respiratory compromise or obstruction
- Blood administration en route
- GSW to chest, abdomen, or neck
- GCS ≤8

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Evidence Based Practice – A multicenter prospective analysis of pediatric trauma activation criteria found centers routinely used additional criterion

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# Other Common High Indicators Among Pediatric Trauma Centers

| | | | | |
|---|---|---|---|---|
| Intubation | Death of occupant | Above ankle amputation | Any GSW | Tachycardia with poor perfusion |
| Fluid bolus >40ml/kg | | | CPR | Penetrating injury to head |
| Ejection from vehicle | | | | |

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# MCJCHV TRAUMA ACTIVATION CRITERIA

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# Level 1 Trauma Team Activation

# Level 1 Criteria- Airway/Breathing

- Any intubated patient
- Unstable Airway (i.e. artificial airway, bagging, airway obstruction)
- Significant facial/ neck injury causing airway obstruction
- Respiratory distress/ compromise (i.e. increased work of breathing)

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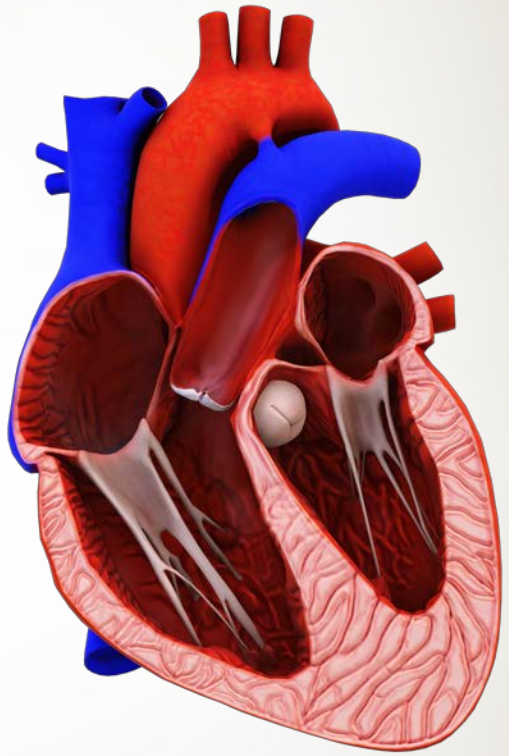
# Level 1 Criteria - Circulation

- Cardiac arrest/ CPR (in field or en route)
- Age-specific hypotension *SBP<70+(2x age in years)
- Blood transfusion en route
- Limb threatening injury (amputation, degloving, crush injury proximal to wrist; pulseless extremity with duskiness, cyanosis, paralysis)
- Significant blood loss or hemorrhage
- Penetrating injury to head/neck/torso (excludes isolated to the eye)



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# Normal Vital Signs Changes

| Age (kg) | Heartrate (min – max) | Systolic BP 70 + (2 x age in years) |
|---|---|---|
| Premie (1-2kg) | 90-180 | 70 |
| Newborn (3-5kg) | 90-180 | 70 |
| 6 month (7kg) | 85-180 | 70 |
| 1 year (10kg) | 80-160 | 72 |
| 3 year (15kg) | 80-190 | 76 |
| 6 year (20kg) | 70-140 | 82 |
| 8 year (25kg) | 70-140 | 86 |
| 10 year (30kg) | 65-140 | 90 |
| 12 year (40kg) | 60-130 | 90 |
| 15 year (50kg) | 55-130 | 90 |
| 18 year (65kg) | 50-130 | 90 |

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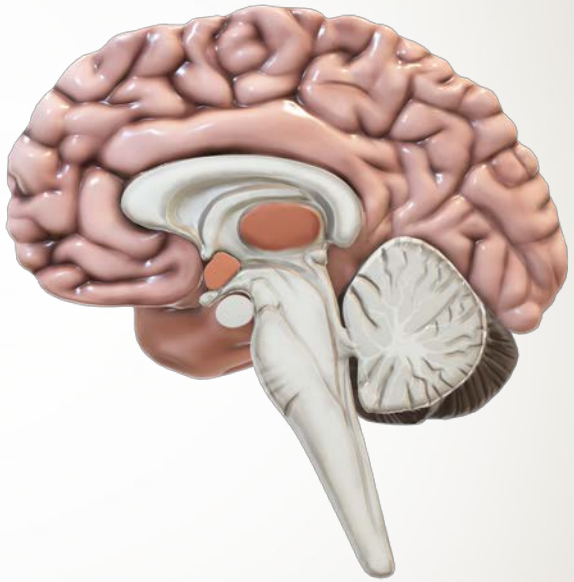
# Level 1 Criteria - Disability

- GCS≤8 with mechanism attributed to trauma
- AVPU of "P"ain or "U"nresponsive with mechanism attributed to trauma
- GCS deterioration by 2 with mechanism attributed to trauma
- Paralysis or quadriplegia



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# Level 1 Criteria - Other

| Burns | MD Discretion |
| --- | --- |
| • ≥ 15% TBSA combined with other trauma/ injury | • **Any patient can be upgraded OR downgraded at the discretion of the PED Attending/Fellow** |

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# Level 2 Trauma Team Activation

- Trauma Fellow/Senior Resident
- PED Attending/ Fellow
- PED Resident/ Intern
- PED RN 1 & RN 2
- Paramedic
- Care Partner
- Respiratory Therapy
- Social Work & Radiology

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# Level 2 Criteria – Airway/Breathing

## Scene

- Sub-Q emphysema of chest and above
- NRB necessary to maintain SaO2 >93% with a mechanism attributed to trauma

## Transfer

- Sub-Q emphysema of chest and above
- Pneumo/hemothorax
- NRB necessary to maintain SaO2 >93% with mechanism attributed to trauma

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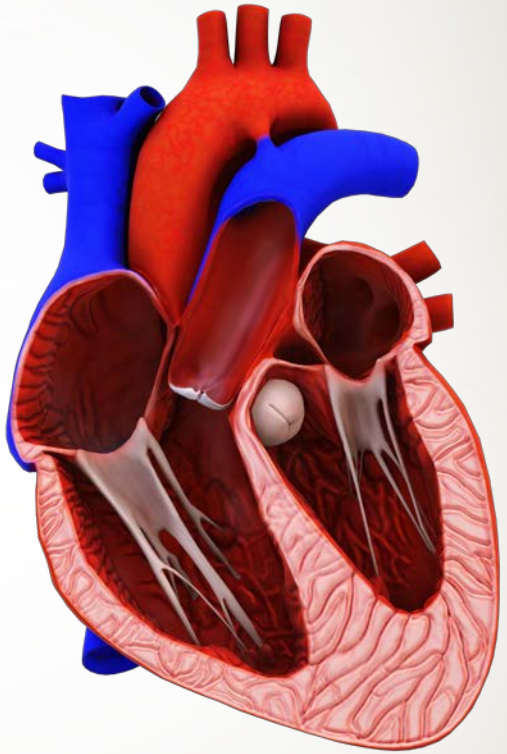
# Level 2 Criteria – Circulation

| Scene | Transfer |
| --- | --- |
| Controlled arterial bleeding, stable VS | Controlled arterial bleeding, stable VS |
| Two or more femur/humerus fractures | Bilateral femur fractures |
| Pelvic or femur fracture with significant mechanism | Complex pelvic fractures |
| Amputation (near/complete), degloving, crush injury distal to wrist or ankle excluding digits | Amputation (near/complete) degloving, crush injury distal to wrist/ankle excluding digits |
| Penetrating injury to the extremity excluding digits | Penetrating injury to the extremity excluding digits |



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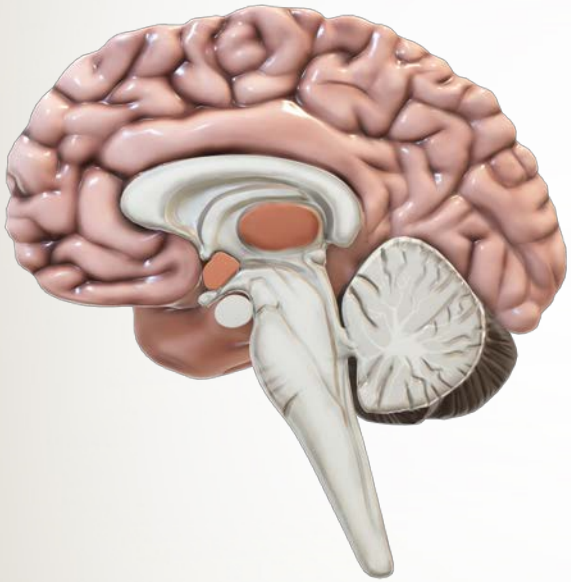
# Level 2 Criteria – Disability



**SCENE**

- GCS 9-13 or responsive to “Verbal” (combative, disoriented)
- Open or depressed skull fracture
- CHI with seizure activity
- LOC >5 minutes

**TRANSFER**

- GCS 9-13 or responsive to “Verbal” (combative, disoriented)
- Open or depressed skull fracture
- Stable EDH, SDH, SAH
- C-spine or spinal cord injury without OR resolved paralysis

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# Level 2 Criteria - OTHER

## SCENE

- MVC with rollover, ejection, death of passenger, significant damage/intrusion, spider windshield
- MCC/ATV with rollover, ejection
- Struck, dragged, or run over by vehicle
- Burns 10-15% TBSA combined with other trauma injury or high voltage burns
- Fall >20ft (2nd story)
- Suspected intra-abdominal injury with mechanism attributed to trauma
  - Abdominal wall bruising: seatbelt sign or handlebar bruising
  - Abdominal pain/tenderness with mechanism attributed to trauma

## TRANSFER

- Suspected intra abdominal injury with mechanism attributed to trauma
  - Abdominal wall bruising: seatbelt sign or handlebar bruise
  - Abdominal pain/tenderness with mechanism attributed to trauma
  - Confirmed intra-abdominal injury
- Burns 10-15% TBSA combined with other trauma injury or high voltage burns

**Any patient can be upgraded/downgraded to a higher level at the discretion of the Trauma/PEM Attending or Fellow**

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# Level 3 Criteria

- Trauma patients not meeting LVL 1 or LVL 2 criteria including patients immobilized with no significant injury
- Burns <10% TBSA <u>combined</u> with other trauma/injury
- Penetrating injury to digits
- Amputation (near/complete), degloving, crush injury to digits

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BURN ALERT

Any 2nd or 3rd degree burn with ≥ TBSA without trauma mechanism

Any intubated burn, smoke inhalation, or inhalation injury

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# Clearing up the "grey" areas

- Hangings
- Dog bites
- Pulseless extremity <u>WITH</u> duskiness, cyanosis, or paralysis

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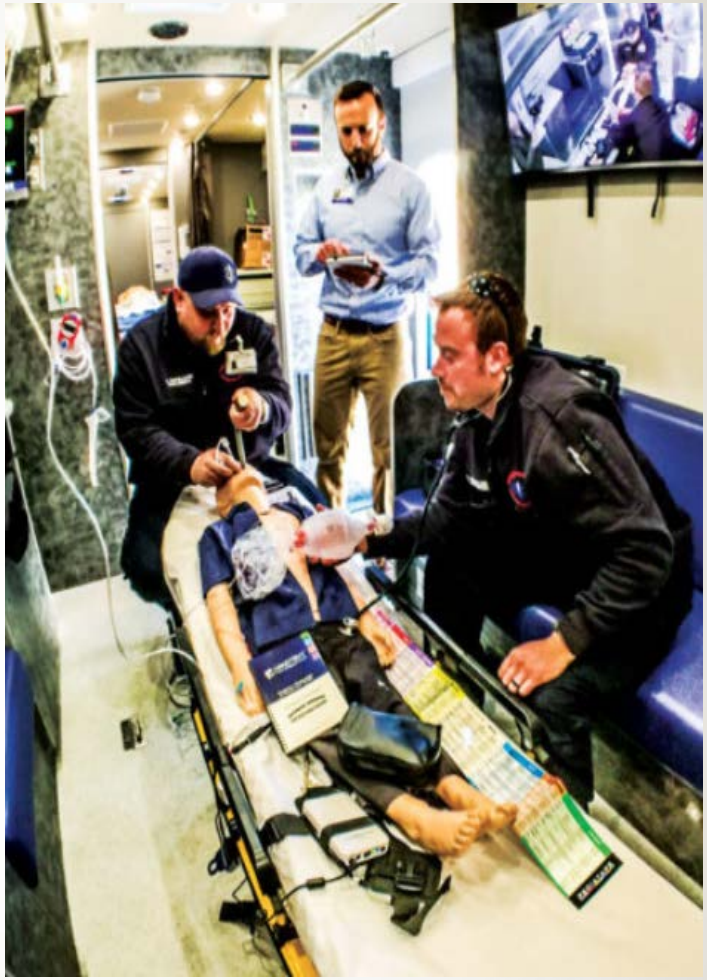
# GOALS

Meet the over and under –

triage ACS requirements

Consistent accurate trauma alerts to aid in preparation

Safest, evidence based pediatric trauma care



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# Thank you!


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MCJCHV Trauma Program Website:

- https://www.vumc.org/pediatric-trauma-service/pediatric-trauma-program

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