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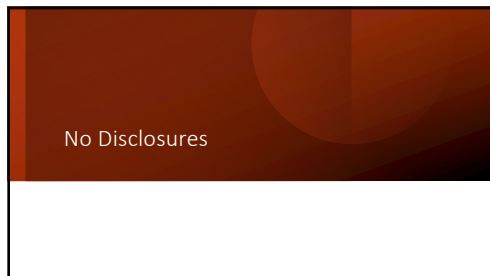
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Objectives

Review	Review the new structure utilized in the Guideline
Identify	Identify updated & new recommendations in the Guideline and their associated research, if applicable
Discuss	Discuss how these guidelines may be implemented in an EMS system

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Why is a Field Triage Guideline Necessary?

Right Patient

Right Place

Right Time

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Why is a Field Triage Guideline Necessary?

Minimize variation, over- and under-triage

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Who does this guideline apply to?

- Civilian 9-1-1 EMS Systems
- Not intended for mass casualty incidents
- Not intended to guide in-hospital trauma team responses



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Time for an Update

GUIDELINE

**OPEN**

National guideline for the field triage of injured patients:  
Recommendations of the National Expert Panel on Field Triage, 2021

Craig D. Newgard, MD, MPH, FACEP, Peter E. Fischer, MD, Mark Geisring, MD, Holly N. Michaels, MPH, Gregory J. Jurkovich, MD, FACS, E. Brooke Lerner, PhD, FAEMS, Mary E. Falat, MD, Theodore R. Delbridge, MD, MPH, Joshua B. Brown, MD, MSc, FACS, Eileen M. Balgore, MD, and the Writing Group for the 2021 National Expert Panel on Field Triage, Portland, Oregon

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How was the Guideline Updated?

- Interdisciplinary Expert Panel
- Systematic Literature Review



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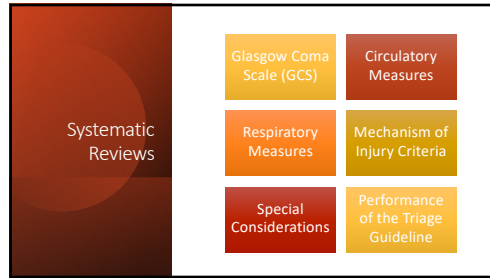
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Statistical Criteria

**TABLE 1. Statistical Criteria Used to Add and Remove Individual Triage Criteria**

• To *add* a new field triage criterion:  $+LR \geq 2$  or  $AUROC \geq 0.60$

Magnitude of predictive utility:

- Large effect:  $+LR \geq 10$ ,  $AUROC \geq 0.80$
- Moderate effect:  $+LR 5-9$ ,  $AUROC 0.7-0.79$
- Small effect:  $+LR 2-4$ ,  $AUROC 0.6-0.69$

• To *remove* a field triage criterion: *no evidence* or  $+LR 1.0-1.5$  or  $AUROC 0.50-0.55$  across multiple studies (triage criteria were not removed based on a single study)

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**Audience Feedback**

- A 40-question survey was widely distributed, receiving 3958 responses.
  - Most were paramedics/EMTs and who completed scene response
- Identified that EMS provider judgment was used to override guideline recommendations < 20% of the time

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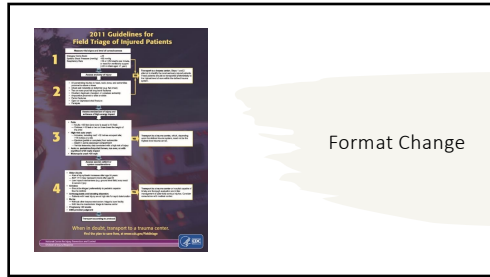
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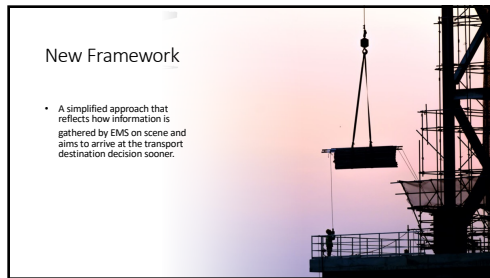
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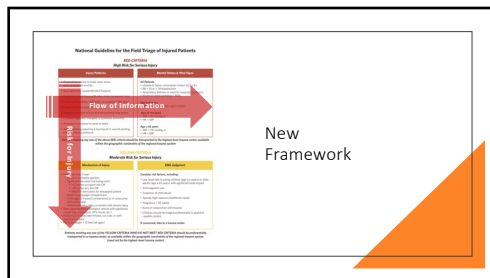
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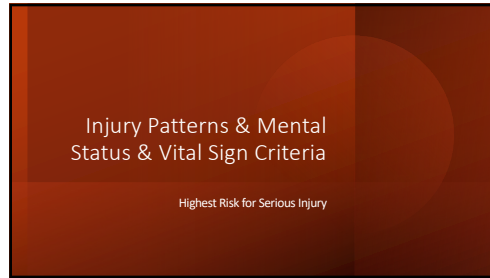
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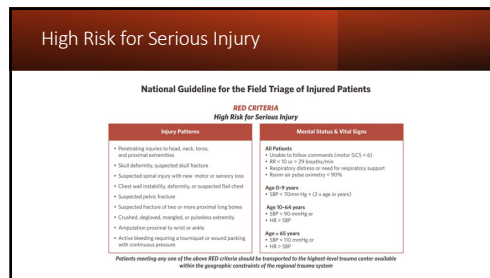
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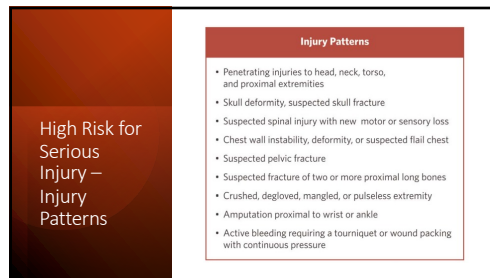
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**New Criterion**

- Active bleeding requiring a tourniquet or wound packing with continuous pressure



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**High Risk for Serious Injury – Mental Status & Vital Signs**

**Mental Status & Vital Signs**

**All Patients**

- Unable to follow commands (motor GCS < 6)
- RR < 10 or > 29 breaths/min
- Respiratory distress or need for respiratory support
- Room-air pulse oximetry < 90%

**Age 0-9 years**

- SBP < 70mm Hg + (2 x age in years)

**Age 10-64 years**

- SBP < 90 mmHg or HR > SBP

**Age > 65 years**

- SBP < 110 mmHg or HR > SBP

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**Modified Criterion: mGCS**

1	No motor response
2	Extension to pain (arm abduction, supination of forearm)
3	Abnormal flexion to pain (pronation of forearm, flexor posturing)
4	Withdrawal from pain (pulls away from pain source – pulls hand away when fingernails are pinched)
5	Localizing pain (purposeful movement toward pain – patient holds/touches head with severe headache or pain)
6	Obeys Commands (patient can execute simple commands with ease)

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New & Modified Criterion: Circulatory Measures

- Shock Index
  - HR > SBP (a shock index of > 1)
  - Among out-of-hospital studies, pooled estimates showed a sensitivity of 37%, a specificity of 85%, and an AUROC of 0.72 for identifying seriously injured patients.
- Age-adjusted Vital Signs
  - SBP < 70 mm Hg + (2 × age in years) (children 0-9 years)

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New & Modified Criteria: Respiratory

-  Respiratory distress or need for respiratory support replaces "ventilatory assistance"
-  Pulse oximetry < 90% is added

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Mechanism of Injury & EMS Judgment

"Anatomic and physiologic criteria identify less than half of patients with serious injuries, the mechanism criteria are important in the triage process."

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### Moderate Risk for Serious Injury

**YELLOW CRITERIA**  
Moderate Risk for Serious Injury

Mechanism of Injury	EMS Judgment
<ul style="list-style-type: none"> <li>High-Risk Auto Crash                             <ul style="list-style-type: none"> <li>Partial or complete ejection</li> <li>Significant intrusion (including roof)                                     <ul style="list-style-type: none"> <li>&gt;12 inches occupant site OR</li> <li>&gt;18 inches any site OR</li> </ul> </li> <li>Need for extrication for entrapped patient</li> <li>Death in passenger compartment</li> <li>Child (age 0-9 years) unrestrained or in unsecured child safety seat</li> <li>Vehicle telemetry data consistent with severe injury</li> </ul> </li> <li>Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.)</li> <li>Pedestrian/bicycle rider thrown, run over, or with significant impact</li> <li>Fall from height &gt; 10 feet (all ages)</li> </ul>	<p>Consider risk factors, including:</p> <ul style="list-style-type: none"> <li>Low-level falls in young children (age 3 years) or older</li> <li>Adults (age 16 years) with significant head impact</li> <li>Anticoagulant use</li> <li>Suspicion of child abuse</li> <li>Special high-resolution healthcare needs</li> <li>Pregnancy &gt; 20 weeks</li> <li>Born in conduction with trauma</li> <li>Children should be transported preferentially to pediatric capable centers</li> </ul> <p>If concerned, take to a trauma center</p>

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available, within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

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### Moderate Risk for Serious Injury - Mechanism

**Mechanism of Injury**

- High-Risk Auto Crash
  - Partial or complete ejection
  - Significant intrusion (including roof)
    - >12 inches occupant site OR
    - >18 inches any site OR
    - Need for extrication for entrapped patient
  - Death in passenger compartment
  - Child (age 0-9 years) unrestrained or in unsecured child safety seat
  - Vehicle telemetry data consistent with severe injury
- Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.)
- Pedestrian/bicycle rider thrown, run over, or with significant impact
- Fall from height > 10 feet (all ages)

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### New Criterion: Unrestrained Children



- Children who are unrestrained or improperly restrained in a motor vehicle accident have higher injury severity and the lack of restraint use predicts more seriously injured children.

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Modified Criterion:

- Extrication



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Modified Criterion: Mechanisms



- Rider separated from transport vehicle with significant impact (e.g., motorcycle, ATV, horse, etc.)
- Fall from height >10 ft (all ages)
- Pedestrian/bicycle rider thrown, run over, or with significant impact

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**EMS Judgment**

Consider risk factors, including:

- Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact
- Anticoagulant use
- Suspicion of child abuse
- Special, high-resource healthcare needs
- Pregnancy > 20 weeks
- Burns in conjunction with trauma
- Children should be triaged preferentially to pediatric capable centers

If concerned, take to a trauma center

Moderate Risk Criteria – EMS Judgment

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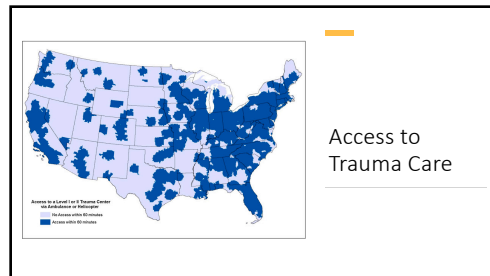
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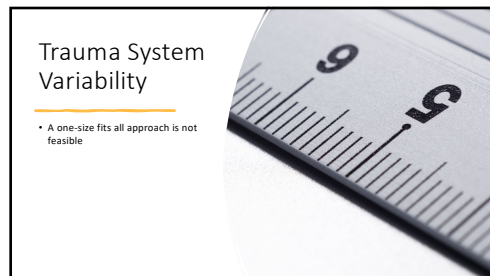
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**Transport Type**

- There is insufficient data to make recommendations regarding if / when air medical resources should be utilized; common considerations are:
  - Time to nearest trauma center
  - Availability of air medical resource
  - Skilled personnel
  - Additional resources (blood products)



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**Implementation**

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**Implementation**

- Guidelines only work if you implement and follow them requiring:
  - Training
  - Updating local protocols
  - Quality improvement / quality assurance
  - Coordination with local trauma centers, other hospitals, and EMS agencies

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Resources

- Arizona Department of Health Services
  - <https://www.azdhs.gov/preparedness/emergency-medical-services-trauma-system/index.php/education-independent-study>
- American College of Surgeons
  - [www.facs.org/fieldtriageguidelines](http://www.facs.org/fieldtriageguidelines)





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Summary

- The 2021 Field Triage Guideline incorporated multiple systematic reviews as well as field provider input and expert opinion to publish an updated guideline that:
  - Aligns with flow of information to EMS
  - Places most high-risk features first
  - Arrives at a transport decision sooner




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Questions?



National Guidelines for the Field Triage of Injured Patients:  
Recommendations of the National Expert Panel on Field Triage,  
2021. Journal of Trauma and Acute Care Surgery 2021;  
91:1097-1106. DOI: 10.1097/TA.0000000000001027

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