

# *Oklahoma Trauma Education Program*

## **The Playbook**



Oklahoma  
Disaster  
Institute



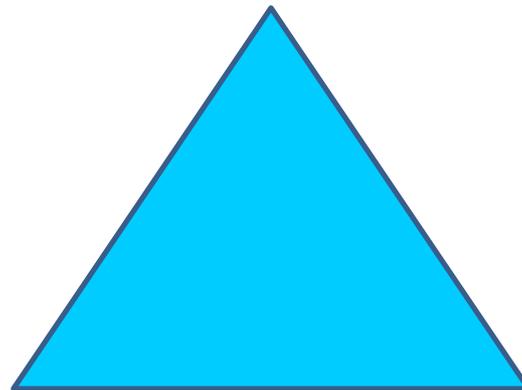
*In partnership with the Oklahoma State Department of Health*



# Getting the right patient to the right place, receiving the right treatment in the right amount of time...

**Right Patient**

Patient Priority



**Right Place with**

**the Right**

**Treatment**

Hospital Resources

**Right Amount of Time**

Time and Distance

(Why?)





# Overview

- **Hospital Classification**
- **Patient Prioritization**
- **TReC Utilization**





# Background

## **In 2005, Trauma Division Established (Senate Bill 1554) :**

- Regional Trauma Advisory Boards (RTABs)
- Regional Plans around the T3
- Established Trauma Referral Center
- Medical Audit Committee and Regional CQI
- EMResource/EMSystem
- Trauma Fund
- Roll-out of the Oklahoma Trauma Education Program (OTEP)

**August 1, 2009, the Trauma and EMS Divisions reorganized into Emergency Systems-OSDH**



# Oklahoma Trauma Regions

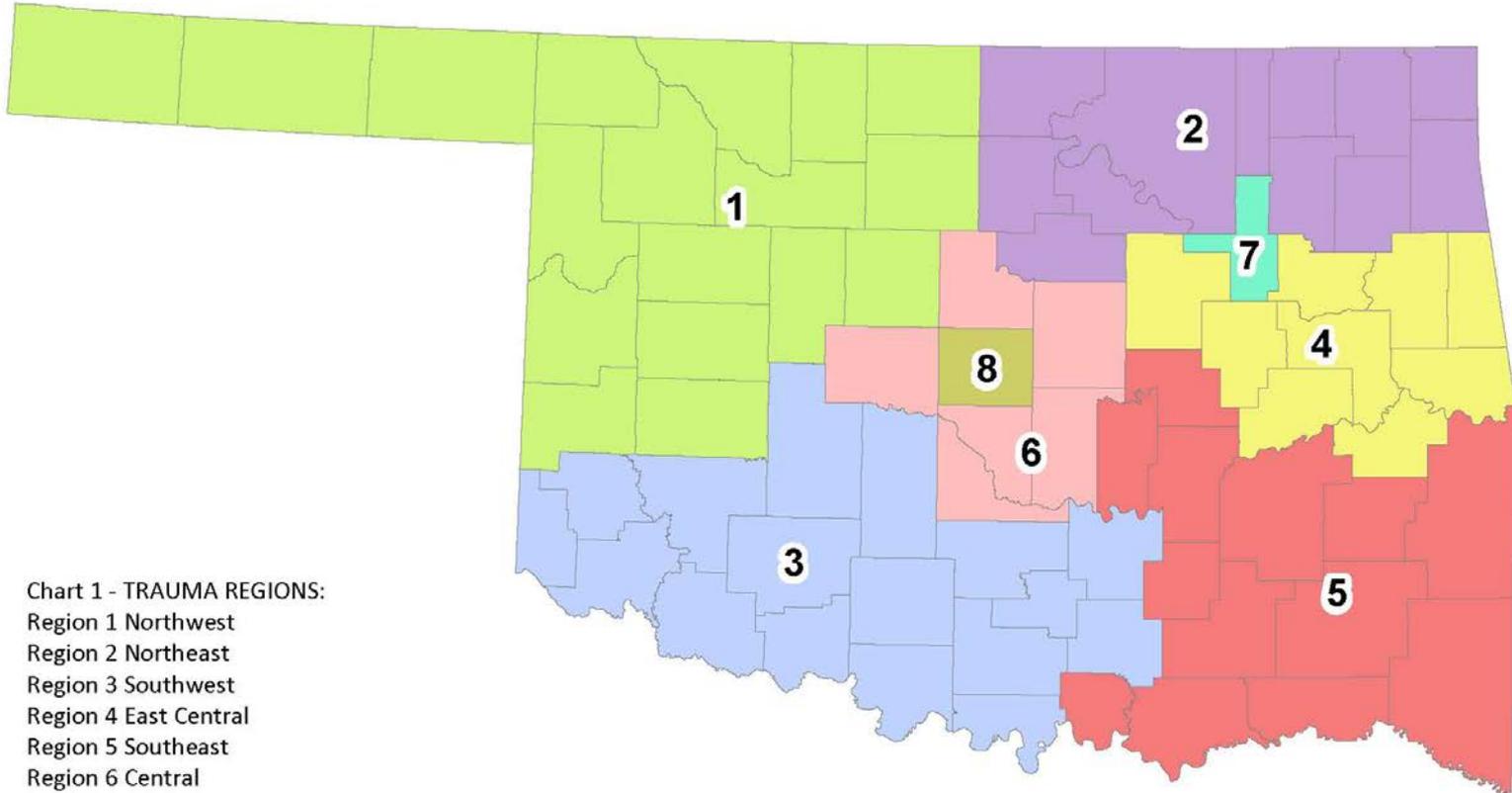
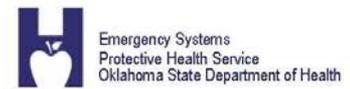
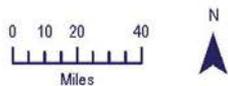


Chart 1 - TRAUMA REGIONS:  
Region 1 Northwest  
Region 2 Northeast  
Region 3 Southwest  
Region 4 East Central  
Region 5 Southeast  
Region 6 Central  
Region 7 Tulsa County  
Region 8 Oklahoma County



# Trauma System Toolbox



- **Trauma Triage Algorithm**
  - Patient Priority
  - Regional Plans
  - Destination Protocols
- **Hospital Classification**
- **Trauma Referral Center (TReC)**
- **EMResource**
- **OPEP Program**
- Trauma Registry DATA
- OKEMESIS
- CQI, MAC, Stakeholders
- Trauma Fund





# Triage, Transport and Transfer Guidelines

Also known as the “T-3 Algorithm”

- 1) Establishes definitions and criteria for Priority 1, 2, and 3 adult and pediatric patients
- 2) Recommends Destinations based on Hospital classification. (capability and capacity)
- 3) Has Pre-Hospital and Interfacility sections
- 4) Served as the foundation for the regional plans
- 5) Available on our website

[http://www.ok.gov/health/Protective Health/Trauma Division/](http://www.ok.gov/health/Protective_Health/Trauma_Division/)



# Begin DVD



# Oklahoma Trauma Center Levels

## Level I

This is the highest level of trauma center. A Level I Trauma Center has an emergency department staffed with emergency physicians and nurses, and maintains a surgeon-led trauma team with rigorous response standards and the capability of rapid surgical intervention when necessary. Comprehensive specialty services are available including but not limited to neurological, cardiovascular and orthopedic surgery. There is a hospital wide commitment with immediate access to surgery, recovery and critical care beds. In addition this level of trauma center provides research and education activities.

## Level II

A Level II Trauma Center has the same resources and clinical capabilities of a Level I and is staffed to provide prompt and comprehensive care to seriously injured patients. A Level II like a Level I functions as a tertiary referral facility capable of managing all types of injured patients. Unlike a Level I a Level II will not provide the same level of research or education activities.

## Level III

A Level III Trauma Center is a facility which staffs a 24 hr. emergency department with at least a physician and nursing staff and has general surgical and some surgical subspecialties, such as orthopedics, on an on-call basis. Prompt anesthesia and operating room capabilities are required in addition to X-ray, laboratory services, recovery room and intensive care beds. This is an intermediate facility capable of handling minor to moderate trauma.

A Level III Trauma Center can function as an enhanced trauma center on days when additional on-call resources, such as neurosurgery, are available in addition to general surgery and orthopedics. An enhanced Level III is referred to as a regional trauma center in this document as well as the prehospital trauma triage reference manual. This information is tracked through EMResources

## Level IV

A facility that staffs a 24 hr. emergency department with at least one of the following:

- Physician Assistant (licensed)
- Nurse Practitioner
- Registered Nurse
- Paramedic (with special trauma training as defined by that facility).





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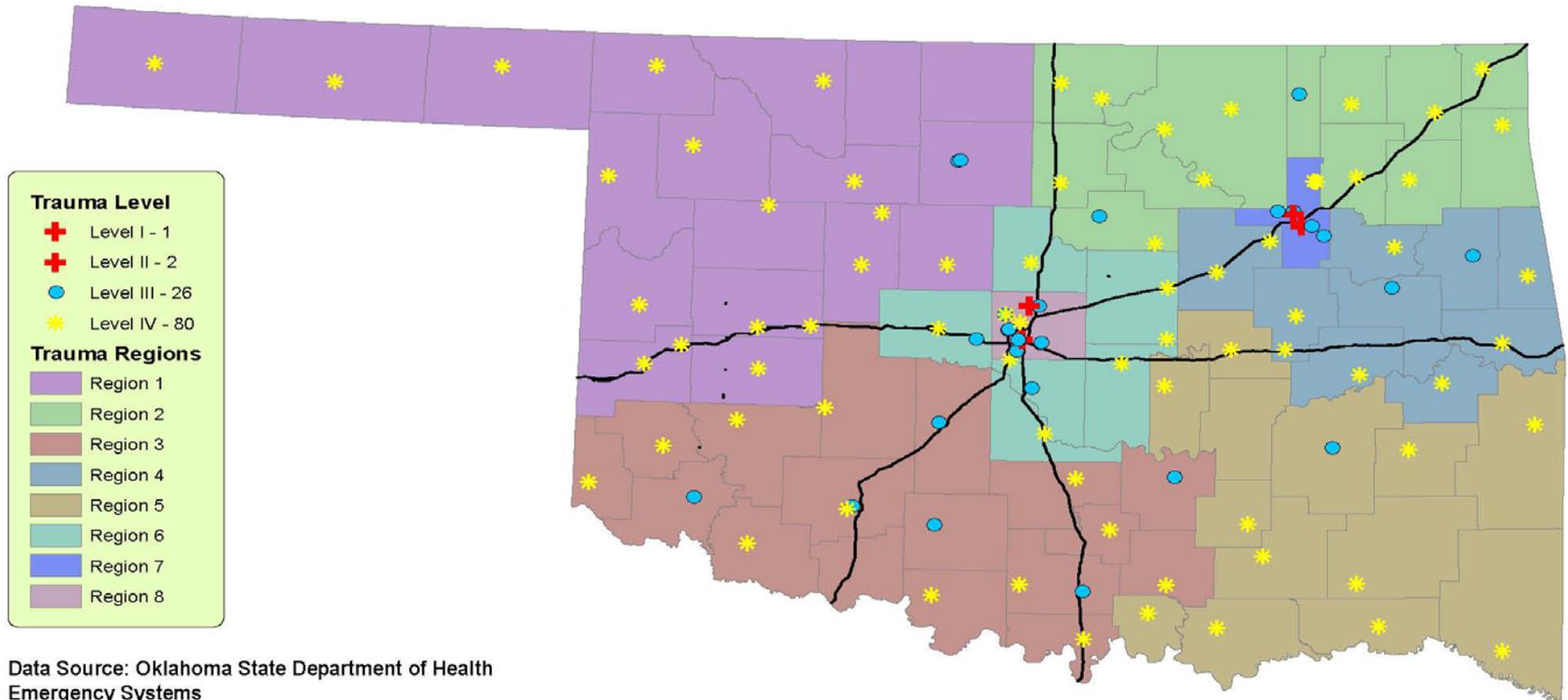
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# Trauma Regions and Hospitals by Trauma Level, Oklahoma 2013



Data Source: Oklahoma State Department of Health  
Emergency Systems

07-11-2013

Projection: USGS Albers Equal Area Conic



**Disclaimer:** This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.



**Emergency Systems  
Protective Health Services  
Oklahoma State Department of Health**

# Resume DVD





# Patient Priority Criteria

## **Priority 1 Trauma Patients**

Patients with high energy blunt or penetrating injury causing physiological abnormalities or significant single or multi-system anatomical injuries

## **Priority 2 Trauma Patients**

Patients with potentially time sensitive injuries due to a high energy event (positive mechanism of injury) or with a less severe single system injury but currently with no physiological abnormalities or significant anatomical injury

## **Priority 3 Trauma Patients**

Patients without physiological abnormalities, altered mentation, neurological deficit, or a significant single system injury. These patients have generally been involved in a low energy event



# Prehospital Trauma Triage

A collaborative effort between Oklahoma Institute for Disaster and  
Emergency Medicine and the Oklahoma State Department of Health.



# Priority 1 Trauma Patients

## Physiological Compromise

- Hemodynamic Compromise- Systolic BP < 90 mmHg

Other signs that should be considered include:

- Sustained tachycardia
- Cool diaphoretic skin
- Respiratory Compromise
  - RR <10 or >29 breaths/minute
  - Or <20 in infant <1 year
- Altered Mentation of trauma etiology
  - GCS <14

## Anatomical Injury

- Penetrating injury of head, neck, chest/abdomen, or extremities proximal to elbow or knee
- Amputation above wrist or ankle
- Paralysis or suspected spinal fracture with neurological deficit
- Flail chest
- Two or more obvious proximal long bone fractures (upper arm or thigh)
- Open or suspected depressed skull fracture
- Unstable pelvis or suspected pelvic fracture
- Tender and/or distended abdomen
- Burns associated with Priority 1 Trauma
- Crushed, degloved, or mangled extremity





# Priority 2 Trauma Patients

## Significant Single System Injuries

- **Neurology:** Isolated head trauma with transient loss of consciousness or altered mental status but currently alert and oriented.
- **Orthopedic:** Single proximal and distal extremity fractures (including open) from high energy event, isolated joint dislocations-knee, hip, elbow, shoulder without neurovascular deficits, and unstable joint (ligament) injuries without neurovascular deficits.
- **Maxillofacial trauma:** Facial lacerations such as those requiring surgical repair, isolated open facial fractures or isolated orbit trauma with or without entrapments, or avulsed teeth.

## High Energy Events

- Ejection of the patient from an enclosed vehicle
- Auto/pedestrian, auto/bike or motorcycle crash with significant impact (> 20 mph) with the patient thrown or run over by a vehicle
- Falls greater than 20 feet for adult, > 10 feet for pediatric or distance 2-3 times height of patient
- Significant assault or altercations
- High risk auto crash
  - The following motor vehicle crashes particularly when the patient has not used personal safety restraint devices:
    - Death in the same passenger compartment
    - Rollover
    - High speed auto crash
    - Compartment intrusion greater than 12 inches at occupant site or > 18 inches at any site
    - Vehicle telemetry data consistent with high risk of injury





## Priority 3 Trauma Patients

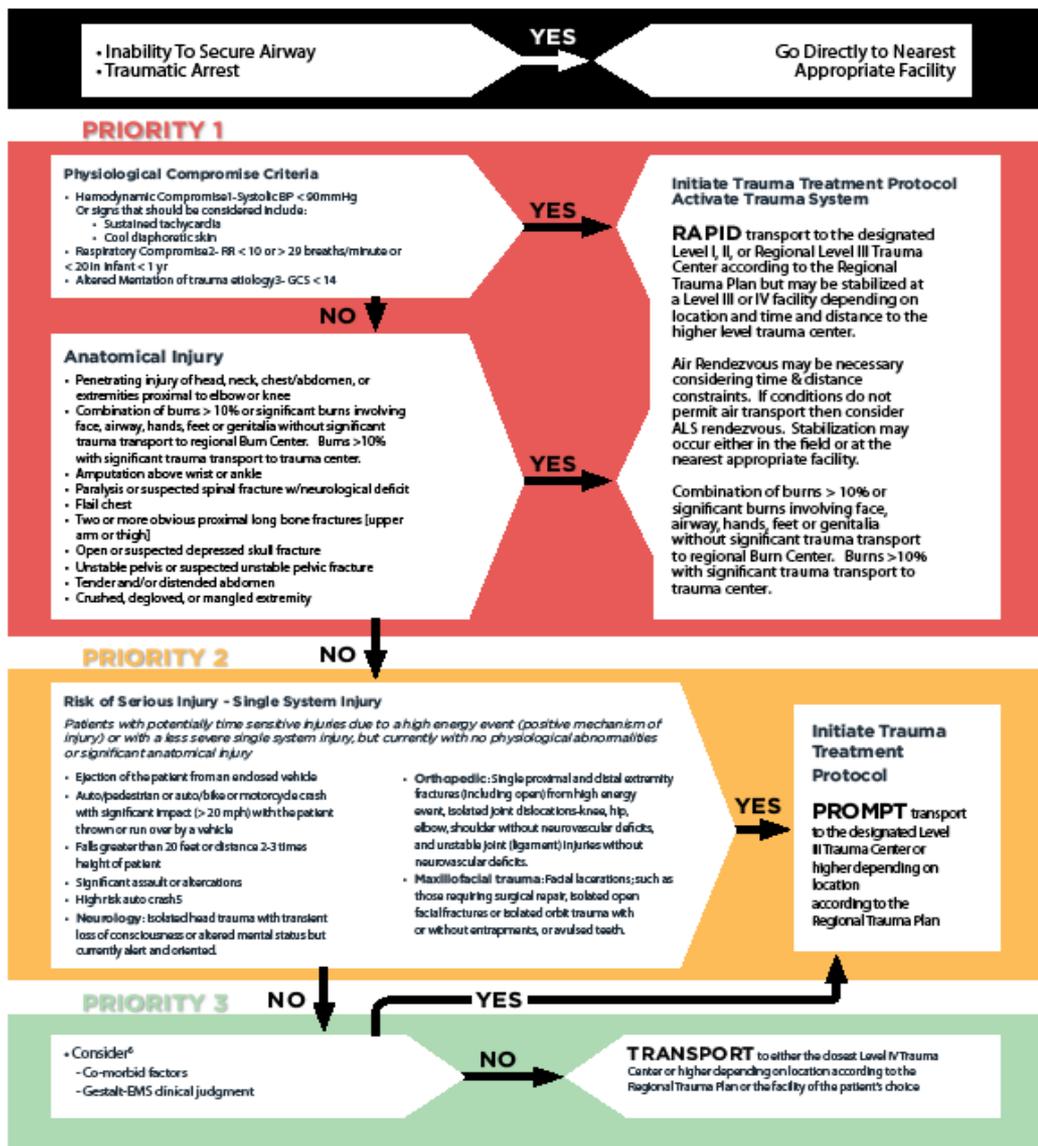
Patients without physiological abnormalities, altered mentation, neurological deficit, or a significant single system injury. These patients have generally been involved in a low energy event

Example: Same level fall with extremity or hip fracture



# ADULT PRE-HOSPITAL TRIAGE AND TRANSPORT GUIDELINES

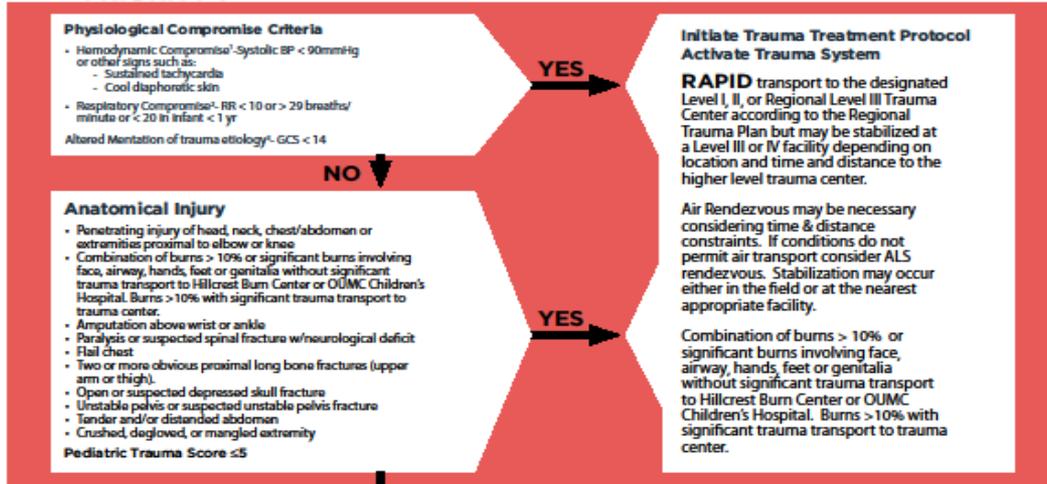
Oklahoma Model Trauma Triage Algorithm



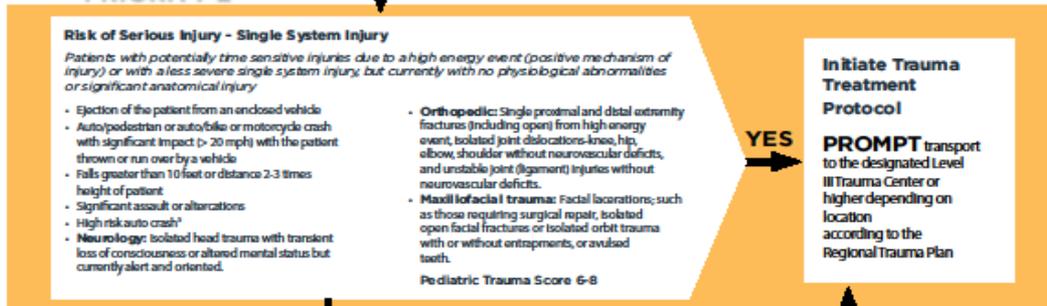
**PEDIATRIC (≤ 16YEARS) PRE-HOSPITAL  
TRIAGE AND TRANSPORT GUIDELINES**  
Oklahoma Model Trauma Triage Algorithm



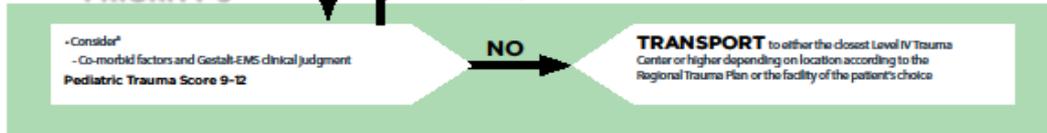
**PRIORITY 1**



**PRIORITY 2**



**PRIORITY 3**



# Resume DVD



# Interfacility Trauma Triage and Transfer Guidelines



A collaborative effort between Oklahoma Institute for Disaster and  
Emergency Medicine and the Oklahoma State Department of Health.

# Thermal Burn Patients

## Priority One

### Burns requiring immediate care and/or consultation/referral by a burn specialist

1

- Inhalation injury
- Significant burns that involve the face, genitalia, perineum, or major joints
- Circumferential burns of an extremity
- Significant electrical burns
- Any patient with traumatic injuries, such as fractures, in which the burn injury poses the greatest risk of morbidity or mortality. (If the trauma poses the greater immediate risk, then the patient should be stabilized in the nearest appropriate trauma facility before being transferred to the burn unit.)
- Partial thickness burns greater than 10% total body surface area
- Full thickness burns greater than 5% of total body surface area in any age group
- Significant burn injury to the hands or feet

## Priority Two

### Injuries requiring urgent consultation/referral with a burn surgeon and potential transfer

2

- Partial thickness burns <10% of total body surface area
  - Full thickness burns <5% of total body surface area
  - Lightning injuries
  - Significant chemical burns (burns with serious threat of functional or cosmetic impairment)
  - Burn injury in patients with significant pre-existing medical disorders that would complicate management or affect mortality
- (more Priority Two Criteria on next page)

# Maxillofacial Patients

## *Priority One*

### **Maxillofacial trauma requiring immediate care by a maxillofacial specialist**

1

- Panfacial trauma with Lefort type (I, II, or III) or zygomaticomalar fracture with mandibular fracture
- Bilateral fracture of the mandible with flail symphyseal segment
- Multiple severe mandibular fractures with tracheostomy or intubation
- Depressed zygomaticomalar fractures with entrapment of the inferior rectus muscle or impingement on the optic nerve bundle
- Facial lacerations that involve major vessels, major branches of the facial nerve, or the parotid duct

## *Priority Two*

### **Injuries requiring urgent consultation with a maxillofacial surgeon and potential transfer**

2

- Open facial fractures
- Isolated orbit trauma with or without entrapments, without visual deficits
- Major facial lacerations

## *Priority Three*

### **Injuries requiring consultation with a maxillofacial surgeon within a period of days**

3

- Isolated anterior frontal sinus fracture
- Isolated naso-ethmoidal fracture
- Zygomatic arch fracture
- Mandible fracture
- Nasal [Closed or simple laceration, no septal hematoma]

# Hand Injury Patients

## Priority One

### Injuries requiring immediate consultation/referral with a hand surgeon

1

- A severely crushed, degloved or mangled hand
- Complete or near-complete amputation of a hand
- High pressure injection injury
- Complete clean-cut amputation proximal to DIP
- Compartment syndrome in hand or forearm (refer to orthopedic surgeon)

## Priority Two

### Injury requires initial stabilization and consultation/referral to an orthopedic or hand surgeon within a few hours

2

- Moderate crush injuries
- Open fractures of carpals or metacarpals, proximal digits
- Multiple angulated and/or displaced fractures or dislocations  $>30^\circ$
- Wrist dislocation
- Deep space infections of the hand, such as suppurative flexor tenosynovitis

## Priority Three

### Injury requires initial stabilization and consultation/referral to an orthopedic or hand surgeon within a period of days

3

- 1-2 phalanges dislocated  $<30^\circ$
- Flexor/extensor tendon lacerations and disruptions
- Collateral ligament injuries/unstable finger joint
- Isolated laceration requiring delayed closure
- Isolated [closed or open] nerve injuries to the wrist, hand or digits
- Closed, isolated carpal bone fractures
- Dislocations of IP joints reduced in the ED
- Any closed, simple hand fracture

# Obstetric Patients

## ***Priority One***

### **Trauma with non-reassuring fetal heart tones**

\*ACOG: Category III FHR Tracing

Involve on-site OB at local facility and trauma consultant at Level I or II receiving facility. If fetus can be delivered while awaiting proper transport and not compromising mother, consider emergent cesarean delivery.

1

## ***Priority Two***

### **Trauma with non-reassuring fetal heart tones**

\*ACOG: Category III FHR Tracing

Involve on-site OB at local facility and trauma consultant at appropriate trauma receiving facility. If fetus can be delivered while awaiting proper transport and not compromising mother, consider emergent cesarean delivery.

2

## ***Priority Three***

### **Trauma with or without reassuring fetal heart tones**

Requires fetal monitoring and/or cesarean delivery and should be kept at local hospital if labor delivery resources available or transferred to nearest facility with those resources.

3

## ***Priority One & Two***

### **Trauma with reassuring fetal heart tones**

\*ACOG: Category I FHR Tracing

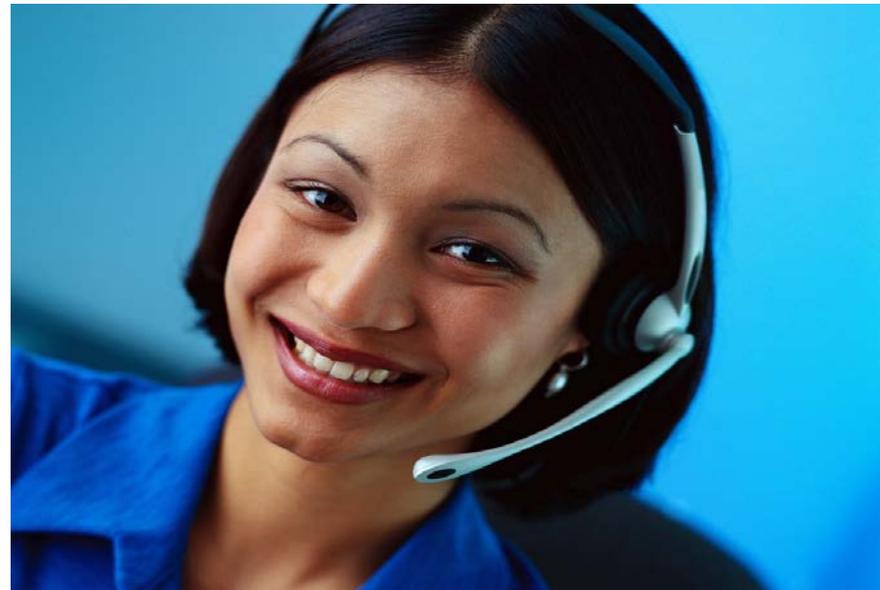
All Priority 1,2, Trauma with reassuring fetal heart tones should maintain fetal monitoring throughout transport process.

\*American College of Obstetricians and Gynecologists (ACOG): Three-Tier Fetal Heart Rate (FHR) Interpretation System

# Trauma Referral Center (TReC)

Trauma Referral Specialists refer the patient to the appropriate hospital based upon the following:

- **Patient Priority**
- **Regional Plan**
- **On-Call Rotation**
- **Available Resources per EMResource**



# EMResource

<https://emresource.emsystem.com/login.jsp>

Statewide Oklahoma - EMResource - Windows Internet Explorer

https://www2.emsystem.com/EMSystem

Statewide Oklahoma - EMResource

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Custom View customize | refresh

1 ST FRANCIS-Priority I & II / OSU MED CTR-Priority II 1 OUMC Critical Info:

	ED Status	Hosp Status	Card	CT Scan	Hand	NeoNat	Neuro	NeuSrg	OBI/GYN	OMF	Ortho	Srg	Comment
OKC Area Hospitals													
Tulsa Area Hospitals													
Air Ambulances		Helicopter Status											Comment
Central ED													
Northwest ED													
Northeast ED													
Southwest ED													
East Central ED													
Southeast ED													
Focus Facilities													
MERC		MERC AVAILABILITY											Comment
Psychiatric													Comment
Rehabilitation													Comment

Status as of: 01 Jul 13:23 CDT

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# Level III Hospital

# Patient 1 chart

- 23 yo male MVC high impact, ejected
- GCS 12, BP 112/68, p 118, RR 34
- Contusion, tender, crepitation right chest wall



# TReC

## Quick Reference Guide

# Interfacility Trauma Triage and Transfer Guidelines Quick Reference Guide



**OKLAHOMA'S TRAUMA REFERRAL CENTER**  
Oklahoma City, Region 8 (888) 658-7262  
Tulsa, Region 7 (866) 778-7262

A collaborative effort between  
Oklahoma Institute for Disaster and  
Emergency Medicine and the  
Oklahoma State Department of Health.

# Instructions & Information

## DIRECTIONS FOR ACCESSING TReC

1. Determine **PRIORITY OF PATIENT**
2. Provide TReC with priority and geographic location of patient. TReC may assist with establishing the priority of the patient if necessary.
3. TReC will determine closest facility with capability and capacity for patient assignment
4. TReC will inform caller of transfer destination and steps needed to complete referral process
5. TReC will transfer caller to receiving facility to give report and receive any recommendations regarding stabilization prior to transfer
  - For unstable Priority 1 injured patients, either multi-system or potentially life or limb threatening single system, transferring the caller to the receiving facility should not interfere with the destination decision made by utilizing Oklahoma's Trauma System established criteria. In most instances, it should not unduly delay the stabilization and transfer of the patient. Exceptions for immediate transfers might exist if life threatening conditions can be temporarily managed at the referring facility. One example is surgical intervention to control hemorrhage.
  - In the case of non-life and non-limb threatening single system injuries, the patient might best be served by delayed transfer hours or days later.

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Region 8  
(888) 658-7262**

**Tulsa  
Region 7  
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## HOW TO DETERMINE PRIORITY OF PATIENT (FILL OUT WORKSHEETS)

1. Check any positive criteria on corresponding green worksheets:
  - Priority 1 Adult**
  - Priority 2 Adult**
  - Priority 1 Pediatric**
  - Priority 2 Pediatric**
  - Priority 3 Adult & Pediatric**
2. Once a patient is identified as Priority 1, implement the following immediately.
  - Initiate internal Trauma Treatment Protocol if definitive surgical care and critical care monitoring are available.
  - If definitive surgical care or critical care monitoring are not available then immediate stabilization & transfer per regional plan to appropriate designated facility.
  - Consultation with receiving facility and/or physician is important as additional care may be necessary prior to transfer. Stabilization may involve surgical intervention prior to transfer.
  - **Do not wait for diagnostic studies to be completed**, however they can be continued while transfer protocol is activated.
3. If no criteria for Priority 1 is found, proceed to the Priority 2 or Priority 3 worksheet.
4. For single system injuries, go to corresponding worksheet.
  - Thermal Burn Patients**
  - Maxillofacial Patients**
  - Hand Injury Patients**
  - Obstetric Patients**
5. Questions regarding specific patients and specific injuries can best be solved with phone consultation with a trauma center physician.

# Priority One Adult

**Priority 1 Adult Definition:** Patients with high energy blunt or penetrating injury causing physiological abnormalities or significant single or multi-system anatomical injuries

## Respiratory Distress and/or Hemodynamic Instability

- SBP consistently <90 or persistent tachycardia following 2 L crystalloid
- Respiratory distress with rate <10 or >29

## Multi-System

- Significant injury to 2 or more body regions
- Head or spine injury combined with: face, chest, abdominal, or pelvic injury; or resulting from a positive mechanism of injury such as MVC, MCC, ATV, auto vs. pedestrian/bicycle, personal watercraft, aircraft, equine accidents with significant forces or velocity; or falls from a significant height
- Burns associated with significant injuries

## Penetrating Injury

- Head, neck, chest/abdomen or extremities proximal to elbow or knee

## Spinal

- Suspected or diagnosed fracture with neurological deficit

## Thoracic

- Major chest wall or pulmonary injury with respiratory compromise
- Wide mediastinum or suspected great vessel, tracheobronchial, or esophageal injury
- Cardiac injury (blunt or penetrating) including tamponade

## Abdominal/Pelvic

- Hemodynamically unstable plus evidence of abdominal or pelvic trauma
- Ruptured hollow viscous
- Pelvic fracture plus shock or other evidence of continuing hemorrhage
- Open pelvic fracture or unstable pelvic ring disruption
- Rigid tender and/or distended abdomen

## Central Nervous System

- GCS  $\leq$  10 or deterioration of 2 or more points
- Penetrating/open head, neck injury or depressed skull fracture
- Neurological deficits/lateralizing signs
- CSF Leak

## Skeletal

- Fracture/dislocation with loss of distal pulses
- Amputation of extremity proximal to wrist or ankle
- Two or more long bone fracture sites
- Major vascular injuries documented by arteriogram or loss of distal pulses
- Crush Injury or prolonged extremity ischemia
- Compartment syndrome

## Clinical Deterioration

- Needs mechanical ventilation
- Sepsis
- Single or multiple organ system failure (deterioration in CNS, cardiac, pulmonary, hepatic, renal or coagulation systems)
- Major tissue necrosis

# Priority One Adult

**Priority 1 Adult Definition:** Patients with high energy blunt or penetrating injury causing physiological abnormalities or significant single or multi-system anatomical injuries

<p><b>Respiratory Distress and/or Hemodynamic Instability</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> SBP consistently &lt;90 or persistent tachycardia following 2 L crystalloid</li> <li><input checked="" type="checkbox"/> Respiratory distress with rate &lt;10 or &gt;29</li> </ul>
<p><b>Multi-System</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Significant injury to 2 or more body regions</li> <li><input type="checkbox"/> Head or spine injury combined with: face, chest, abdominal, or pelvic injury; or resulting from a positive mechanism of injury such as MVC, MCC, ATV, auto vs. pedestrian/bicycle, personal watercraft, aircraft, equine accidents with significant forces or velocity; or falls from a significant height</li> <li><input type="checkbox"/> Burns associated with significant injuries</li> </ul>
<p><b>Penetrating Injury</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Head, neck, chest/abdomen or extremities proximal to elbow or knee</li> </ul>
<p><b>Spinal</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Suspected or diagnosed fracture with neurological deficit</li> </ul>
<p><b>Thoracic</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Major chest wall or pulmonary injury with respiratory compromise</li> <li><input checked="" type="checkbox"/> Wide mediastinum or suspected great vessel, tracheobronchial, or esophageal injury</li> <li><input type="checkbox"/> Cardiac injury (blunt or penetrating) including tamponade</li> </ul>

<p><b>Abdominal/Pelvic</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Hemodynamically unstable plus evidence of abdominal or pelvic trauma</li> <li><input type="checkbox"/> Ruptured hollow viscous</li> <li><input type="checkbox"/> Pelvic fracture plus shock or other evidence of continuing hemorrhage</li> <li><input type="checkbox"/> Open pelvic fracture or unstable pelvic ring disruption</li> <li><input type="checkbox"/> Rigid tender and/or distended abdomen</li> </ul>
<p><b>Central Nervous System</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> GCS ≤ 10 or deterioration of 2 or more points</li> <li><input type="checkbox"/> Penetrating/open head, neck injury or depressed skull fracture</li> <li><input type="checkbox"/> Neurological deficits/lateralizing signs</li> <li><input type="checkbox"/> CSF Leak</li> </ul>
<p><b>Skeletal</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Fracture/dislocation with loss of distal pulses</li> <li><input type="checkbox"/> Amputation of extremity proximal to wrist or ankle</li> <li><input type="checkbox"/> Two or more long bone fracture sites</li> <li><input type="checkbox"/> Major vascular injuries documented by arteriogram or loss of distal pulses</li> <li><input type="checkbox"/> Crush Injury or prolonged extremity ischemia</li> <li><input type="checkbox"/> Compartment syndrome</li> </ul>
<p><b>Clinical Deterioration</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Needs mechanical ventilation</li> <li><input type="checkbox"/> Sepsis</li> <li><input type="checkbox"/> Single or multiple organ system failure (deterioration in CNS, cardiac, pulmonary, hepatic, renal or coagulation systems)</li> <li><input type="checkbox"/> Major tissue necrosis</li> </ul>

# Priority 1 Adult

Patients with high energy blunt or penetrating injury causing physiological abnormalities or significant single or multi-system anatomical injuries

- Positive criteria
- Stabilize life threatening conditions. **DO NOT delay transfer decision by performing unnecessary (non-therapeutic) diagnostic testing.**
- Use clinical history and physical to determine if any of the criteria below are positive. **Once any one is identified, implement the following immediately [do not wait for diagnostic studies to be completed, however they can be continued while transfer protocol is activated]:**
  - Initiate [internal Trauma Treatment Protocol](#) if definitive surgical care and critical care monitoring are available.
  - If definitive surgical care or critical care monitoring are not available then immediate stabilization & [transfer per regional plan](#) to appropriate designated facility.
  - Consultation with receiving facility and/or physician is important as additional care may be necessary prior to transfer. Stabilization may involve surgical intervention prior to transfer.



# Destination Determination Process for Priority 1 Patients

- **TReC Script:** *“The patient meets the criteria for Priority 1. The closest Level I, Level II or Regional Level III hospital with the capacity and capability to care for the patient is \_\_\_\_\_. The hospital is receiving patients, the patient will go to hospital \_\_\_\_\_. This hospital was selected based on the OSDH Trauma System design. Standby and I will transfer you to hospital \_\_\_\_\_ to give report and receive any recommendations regarding stabilization prior to transfer. I will remain on the line. Your TReC number is \_\_\_\_\_, please document that case identification in your transfer notes”.*



# Patient Preparation for Transport

Oklahoma City  
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Tulsa  
Region 7  
(866) 778-7262

## Patient Preparation for Transport:

Arranging for the referring caregiver to speak to personnel at the receiving facility, as well as the receiving physician, is extremely important as specific recommendations may be made for further care prior to transfer

### Anticipate Need

Anticipate and recognize quickly the need to transfer any patient needing care that exceeds the capability of your hospital

### Contact Early

- Call TReC to arrange the transfer
- Provide TReC with the PRIORITY and the geographic location of the patient
- TReC will determine the closest facility with the means and staffing to handle your patient
- TReC will get you in contact with the receiving and/or accepting physician

### Air vs. Ground Transport

Consideration should be given to the appropriate choice of air versus ground transport due to weather, patient condition and injuries, and distance to final destination. Refer to transport considerations in the trauma reference manual.

### Stabilize

- Stabilize ABC's as per guidelines book
  - Ensure that the AIRWAY is protected
  - Stabilize breathing if necessary
  - Provide adequate hemorrhage control and fluid resuscitation if necessary
- Stabilize single system injuries as per guidelines book

### Talk to Receiving Facility

- Talk to the Receiving facility and the accepting doctor
- Accepting physician may have specific recommendations for transport and/or stabilization of patient. The accepting physician may need special staff for operative management of patient.
- For unstable Priority 1 injured patients, either multi-system or potentially life or limb threatening single system, transferring the caller to the receiving facility should not interfere with the destination decision made by utilizing Oklahoma's Trauma System established criteria. In most instances, it should not unduly delay the stabilization and transfer of the patient. Exceptions for immediate transfers might exist if life threatening conditions can be temporarily managed at the referring facility. One example is surgical intervention to control hemorrhage.
- In the case of non-life and non-limb threatening single system injuries, the patient might best be served by delayed transfer hours or days later.

### Documentation

#### Ensure that complete documentation is transferred with the patient

- Copies of all notes, exams, and consults
- Copies of all lab results
- Copies of all EKG's
- Copies or CD's of all x-rays and CT scans
- Lab results and radiology reports can be faxed to the receiving hospital when they are available
- Recent H&P's, EKG's and x-rays for comparison would generally be helpful, if available

**Cell phones and internet connected computers are capable of sending quality digital pictures to the referral physician**

# Patient 2 chart

- 35 yo male MVC low impact,
- GCS 15, vitals normal
- Mild contusion head, transient LOC



# Priority One Adult

**Priority 1 Adult Definition:** Patients with high energy blunt or penetrating injury causing physiological abnormalities or significant single or multi-system anatomical injuries

## Respiratory Distress and/or Hemodynamic Instability

- SBP consistently <90 or persistent tachycardia following 2 L crystalloid
- Respiratory distress with rate <10 or >29

## Multi-System

- Significant injury to 2 or more body regions
- Head or spine injury combined with: face, chest, abdominal, or pelvic injury; or resulting from a positive mechanism of injury such as MVC, MCC, ATV, auto vs. pedestrian/bicycle, personal watercraft, aircraft, equine accidents with significant forces or velocity; or falls from a significant height
- Burns associated with significant injuries

## Penetrating Injury

- Head, neck, chest/abdomen or extremities proximal to elbow or knee

## Spinal

- Suspected or diagnosed fracture with neurological deficit

## Thoracic

- Major chest wall or pulmonary injury with respiratory compromise
- Wide mediastinum or suspected great vessel, tracheobronchial, or esophageal injury
- Cardiac injury (blunt or penetrating) including tamponade

## Abdominal/Pelvic

- Hemodynamically unstable plus evidence of abdominal or pelvic trauma
- Ruptured hollow viscous
- Pelvic fracture plus shock or other evidence of continuing hemorrhage
- Open pelvic fracture or unstable pelvic ring disruption
- Rigid tender and/or distended abdomen

## Central Nervous System

- GCS  $\leq$  10 or deterioration of 2 or more points
- Penetrating/open head, neck injury or depressed skull fracture
- Neurological deficits/lateralizing signs
- CSF Leak

## Skeletal

- Fracture/dislocation with loss of distal pulses
- Amputation of extremity proximal to wrist or ankle
- Two or more long bone fracture sites
- Major vascular injuries documented by arteriogram or loss of distal pulses
- Crush Injury or prolonged extremity ischemia
- Compartment syndrome

## Clinical Deterioration

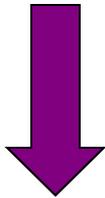
- Needs mechanical ventilation
- Sepsis
- Single or multiple organ system failure (deterioration in CNS, cardiac, pulmonary, hepatic, renal or coagulation systems)
- Major tissue necrosis

**No Criteria=  
Proceed to  
Priority 2**



# Positive Criteria= Priority 2

Follow steps in  
Trauma Reference Manual



Green Tab-Patient Triage  
& Transfer Guidelines

## Priority Two Adult

**Priority 2 Adult Definition:** Patients with potentially time sensitive injuries due to a high energy event (positive mechanism of injury) or with a less severe single system injury, but currently with no physiological abnormalities or significant anatomical injury

### Spinal

- Any identified spinal fracture without neurological deficits

### Thoracic

- Isolated chest trauma – pain, mild dyspnea
- Rib fractures, pneumothorax, hemothorax without respiratory compromise
- Unilateral pulmonary contusion without respiratory compromise

### Abdominal/Pelvic

- Hemodynamically stable isolated abdominal trauma
- Hemodynamically stable isolated solid organ injuries
- Stable Pelvic Fractures

### Head & CNS

- Head Injury GCS >10
- Head injury with LOC <5 minutes
- Head injury with transient neuro findings
- Isolated open facial fractures
- Isolated orbit trauma with or without entrapments

### Skeletal

- Single proximal extremity fractures, (including open) from high energy event
- Distal extremity fractures, (including open) from high energy event
- Isolated joint dislocations – knee, hip, elbow, shoulder without neurovascular deficits
- Unstable joint (ligament) injuries without neurovascular deficits

### Comorbidity Considerations (Potential upgrade from Priority 2 to Priority 1)

- Age >55
- Known cardiac, respiratory or metabolic disease
- Immunosuppression
- Bleeding disorder or anticoagulants

### Mechanism of Injury Alone (No Priority 1 symptoms or findings)

- Ejection of patient from enclosed vehicle
- Adult auto/pedestrian, auto/bike, or motorcycle crash with significant impact and patient thrown or run over by vehicle
- Falls >20 feet or distance 2-3 times height of patient
- Significant assault or altercations
- Other "high energy" events (e.g., patients involved with motor vehicle crashes with significant vehicular damage and not using personal safety restraints)

- **If yes**, *“Have you attempted to contact them?”*
  - **If yes to contact question**, *“What is the reason you are calling us?”* (note: gather information)
  - **If No to contact question**, *“We suggest you make contact because it would appear you have the capacity and capability to care for this type of patient. You should call your on-call doctor. If you cannot get hold of them, call us back. Your hospitals’ inability to provide the appropriate specialist will be automatically referred for review by the Medical Audit Committee.”*
  
- If No to first question, go to next page



# Destination Determination Process for Priority 2 Patients

- **If “no” to the question:** *“Does your hospital have the appropriate specialist on call to care for and stabilize this patient?”*



- **TReC script:** *“The patient meets the criteria for Priority 2, the closest hospital with the capacity and capability to care for the patient is \_\_\_\_\_. The hospital is receiving patients, the patient will go to hospital \_\_\_\_\_. This hospital was selected based on the OSDH Trauma System design. Standby and I will transfer you to hospital \_\_\_\_\_ to give report and receive any recommendations regarding stabilization prior to transfer. I will remain on the line. Your TReC number is \_\_\_\_\_, please document that case identification in your transfer notes”.*



## Simplified TReC Patient Prioritization and Hospital Selection Matrix

1st - Determine Priority of Patient				2nd - Select Appropriate Hospital Type	3rd - Determine Location
System:	Patient Priority:	Adult / Peds	Prioritization Criteria (TReC worksheets):	Disposition by Hospital Level:	Hospital Selection Notes: (check EMResource for availability)
Multi/unstable	P-1	Adult	≥ 16 y.o. & any "box" checked on P-1 page	Closest Level I, II or Regional Level III	
Multi/unstable	P-1	Peds	≤ 16 y.o. & any "box" checked on P-1 page	St Francis (Region 7-Tulsa) / OU (Region 8-OKC)	
MOI or SS	P-2	Adult	No P-1 "Boxes", at least one P-2 box	<b>Closest Level III in Region</b> (with appropriate on-call capability)	-Spinal - Imaging capabilities, EP, Orthopedics -Thoracic - Imaging capabilities, EP, GS -Abdominal/Pelvic - Imaging capabilities, EP, GS -CNS - Imaging capabilities, EP -Skeletal - Imaging capabilities, EP, Orthopedics -MOI Alone - Imaging capabilities, EP -Hand, OMF, Burn, OB - See specific single system flow diagram
MOI or SS	P-2	Peds	No P-1 "Boxes", at least one P-2 box	St Francis (Region 7-Tulsa) / OU (Region 8-OKC)	
MOI or SS	P-3	Adult	No P-1 or P-2 "Boxes"	Closest Level III	
MOI or SS	P-3	Peds	No P-1 or P-2 "Boxes"	Closest Level III	
ORTHO	P-3	Both	No P-1 or P-2 "Boxes"	Closest Level III WITH ORTHO on Call	check EMResource for ORTHO capability
HAND	P-1	Both	See "Hand Injury"	Hand Surgeon On Call	Region 1, 3, 6 → Region 8
HAND	P-2 & P-3	Both	See "Hand Injury"	Closest ORTHO On Call	Region 2, 4, 5 → Region 7 check EMResource for ORTHO capability
MAXILLOFACIAL	P-1	Both	Requires OMF Surgeon	OMF Surgeon On Call	Region 7-Tulsa = "On Call" Level II or Level III
MAXILLOFACIAL	P-2 & P-3	Both	Requires Consultation	Phone to phone consult	Region 8 OKC=On Call Hospital Consult w/closest "on call" Maxillofacial, per EMResource
BURNS	P-1	Adult	Requires <b>immediate care</b> by burn specialist	Hillcrest (Region 7-Tulsa) / Baptist (Region 8-OKC)	
BURNS	P-1	Peds	Requires <b>immediate care</b> by burn specialist	Hillcrest (Region 7-Tulsa) Children's (Region 8-OKC)	
BURNS	P-2	Adult	Requires <b>urgent consultation</b> & poss. transfer	Closest Level III	
BURNS	P-2	Peds	Requires <b>urgent consultation</b> & poss. transfer	Hillcrest (Region 7-Tulsa) Children's (Region 8-OKC)	
BURNS	P-3	Adult		Closest Level III	
BURNS	P-3	Peds		Closest Level III	

See Single system Flow Diagram for Hand, Maxillofacial, Thermal, Burn and Obstetric Injuries

MOI = Mechanism of Injury SS = Single System injury

EP= Emergency Physician GS= General Surgeon OB=Obstetrician



# Determining appropriate resources

- **Priority 1 Adults- Level I, II, or Regional Level III**
- **Priority 1 and Priority 2 Pediatrics**
  - East Side of State: Saint Francis in Tulsa
  - West Side of State: OU Medical Center in OKC
- **Priority 2 Adult-Closest Appropriate Facility based on capability and capacity to provide definitive care**
  - Spinal- Imaging capabilities, Emergency Physician, Orthopedics
  - Thoracic- Imaging capabilities, Emergency Physician, General Surgery
  - Abdominal/Pelvic- Imaging capabilities, Emergency Physician, General Surgery
  - CNS- Imaging capabilities, Emergency Physician
  - Skeletal- Imaging capabilities, Emergency Physician, Orthopedics
  - MOI Alone- Imaging capabilities, Emergency Physician
  - Hand, OMF, Burn, OB- See specific single system flow diagram



# Patient 3

- 23 yo male mechanic – engine fell on his hand: multiple fractures, extensor tendon injuries, open





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# Hand Injury Patients

## Priority One

**Injuries requiring immediate consultation/referral with a hand surgeon**

- Complete or near-complete amputation of a hand resulting in disruption of the vascular supply to the hand
- Complete, clean-cut amputation proximal to DIP
- A severely crushed, degloved or mangled hand
- High-pressure injection injury
- Compartment syndrome in the hand or forearm

## Priority Two

**Injuries requiring initial stabilization and consultation/referral to a physician trained in hand surgery within a few hours**

- Moderate crush injuries
- Open fractures of carpals or metacarpals, proximal digits
- Multiple angulated and/or displaced fractures or dislocations >30°
- Perilunate injuries
- Deep space infections of the hand, such as suppurative flexor tenosynovitis

## Priority Three

**Injuries requiring initial stabilization and consultation/referral to a physician trained in hand surgery within a period of days**

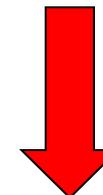
- 1-2 phalanges dislocated <30°
- Flexor/extensor tendon lacerations and disruptions
- Collateral ligament injuries/unstable finger joint
- Isolated laceration requiring delayed closure
- Isolated [closed or open] nerve injuries to the wrist, hand or digits
- Closed, isolated carpal bone fractures
- Dislocations of IP joints reduced in the ED

**Cell phones and internet connected computers are capable of sending quality digital photographs to the referral physician.**

**Positive Criteria=  
Priority 1**

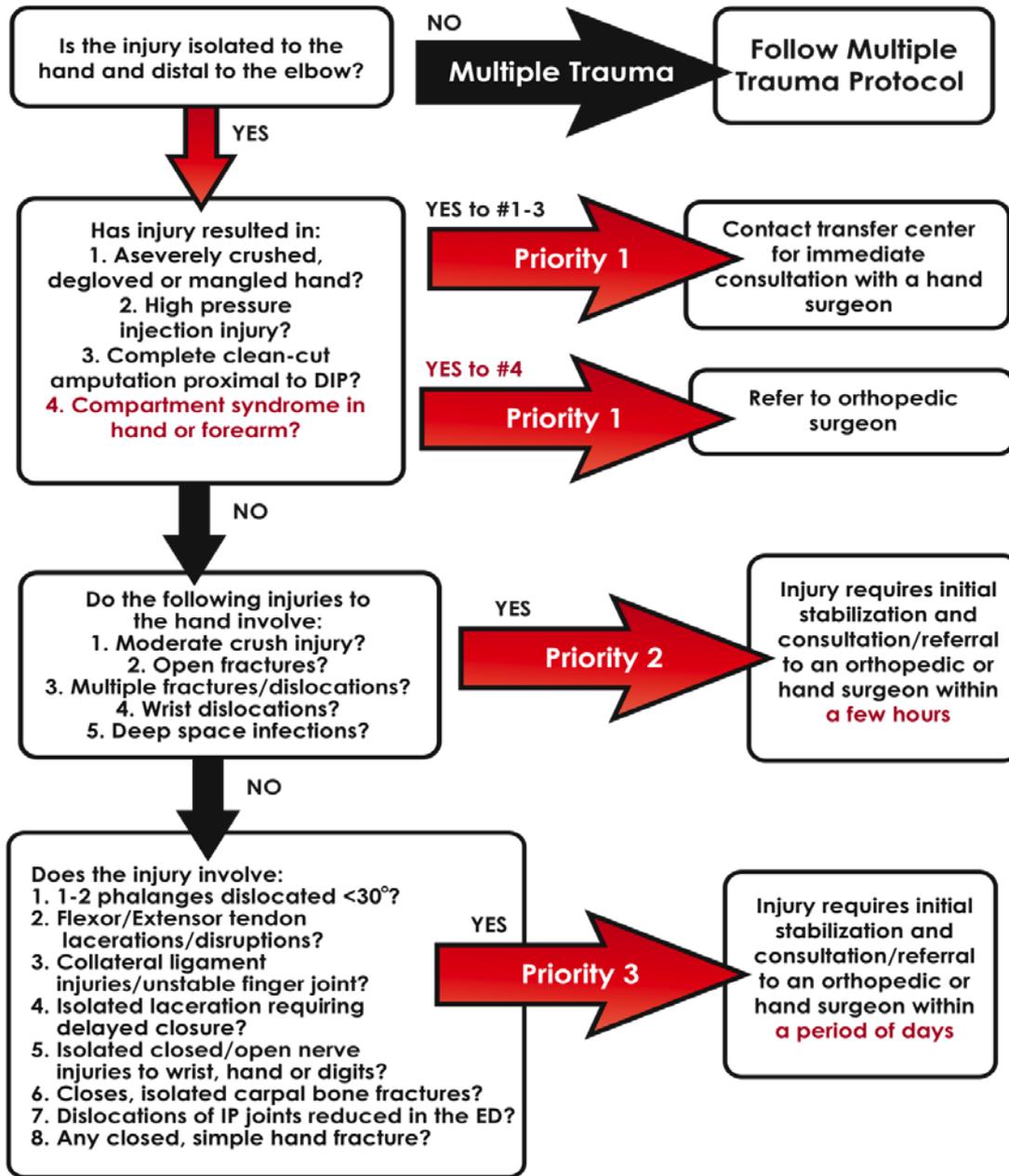
**Single System-  
Hand**

Follow steps in  
Trauma Reference Manual



**Red Tab – Single System  
Hand Injuries**

# Single System Hand Injury Flow Diagram



# Hand Injury Patients

## Stabilization

1. **Assure that there are no other significant injuries. If there are other injuries, refer to the multiple trauma protocol.**
2. **Stop the bleeding**
  - a. Remove any visible objects in the wound that are easy to remove, and remove or cut clothing from around the wound.
  - b. Apply steady direct pressure for a full 15 minutes. If blood soaks through the cloth, apply another one without lifting the first. If there is an object in the wound, apply pressure around the object, not directly over it.
3. **Check and treat for shock**
4. **Remove rings or bracelets as soon as possible, as they may be difficult to remove the jewelry once swelling occurs.**
5. **Use rest, ice, compression, and elevation (RICE) for pain and swelling. Use narcotics as needed for pain that is not relieved with RICE.**
6. **Splint the injured area without trying to straighten the injured part.**
7. **Amputated or partial amputations**
8. **Many current cell phones and internet-connected computers are capable of sending quality digital photographs to the referral physician and these photographs may save the patient unnecessary time and expensive ambulance transports.**

**NOTE: Do not inject the site of an amputation with local anesthesia. Local injection may cause vasoconstriction or direct vessel injury.**

# Resume DVD

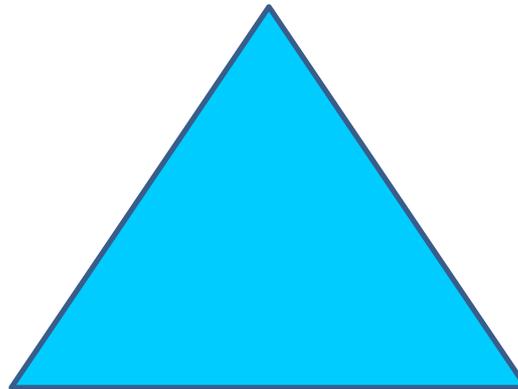




# Getting the right patient to the right place, receiving the right treatment in the right amount of time...

**Right Patient**

Patient Priority



**Right Place with  
the Right  
Treatment**

Hospital Resources

**Right Amount of Time**

Time and Distance

(Why?)





# Summary

- **Hospital Classification**
- **Patient Prioritization**
- **TReC Utilization**





# Contact Information:

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Emergency Systems

1000 NE 10<sup>th</sup> Street

Oklahoma City, OK 73117-1299

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