Oklahoma Trauma Education Program

The Playbook

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
Trauma System Toolbox

- Trauma Triage Algorithm
  - Patient Priority
  - Regional Plans
  - Destination Protocols
- Hospital Classification
- Trauma Referral Center (TReC)
- EMResource
- OTEP 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/
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).
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.
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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 (at a minimum), 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 EMResource.
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).
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

1. Inability To Secure Airway
   Traumatic Arrest
   **YES**
   Go Directly to Nearest Appropriate Facility

2. Physiological Compromise Criteria
   - Hemodynamic Compromise: Systolic BP < 90mmHg
   - Signs that should be considered include:
     - Sustained tachycardia
     - Cool, diaphoretic skin
     - Respiratory Compromise: RR < 16 or > 25 breaths/minute or
     - < 150 mmHg MAP, or
     - A Blunt Traumatic Injuries: Abbreviated Injury Scale: GCS < 14
   **YES**

3. Anatomical Injury
   - Penetrating injury to head, neck, chest, abdomen, or
   - Extremities proximal to elbow or knee
   - Combination of burns > 10% or significant burns involving
   - Face, airway, hands, feet, or genitalia without significant trauma transport to regional Burn Center. Burns >10%
   - With significant trauma transport to trauma center
   - Amputation above wrist or ankle
   - Penetrating or suspected spinal fracture with neurological deficit
   - Fracture
   - Two or more obvious proximal long bone fractures (upper arm or thigh)
   - Open or suspected depressed skull fracture
   - Unstable pelvic or suspected unstable pelvic fracture
   - Tenderness or dimple in abdomen
   - Crushed, deformed, or amputated extremity
   **YES**

4. Risk of Serious Injury - Single System Injury
   Patients with potentially life-threatening injuries due to high-energy event (positive mechanism of injury) or with a less severe single system injury, but cannot be risked on whether physiological or anatomical injury
   - Ejection of the patient from an involved vehicle
   - Autopedestrian or auto/bike/pedestrian crash
   - With significant impact (>20 m/s) with the patient
   - Thrown or run over by a vehicle
   - Pile-up or > 10 feet or distance > 20 times
   - Height of patient
   - Significant crush injuries
   - High-speed auto crashes
   - Neurologic: closed head trauma with transient loss of consciousness or altered mental status but currently alert and intact
   - Orthopaedic: single proximal and distal extremity
   - Fractures including open fractures, high-energy event, isolated joint dislocations, high-speed, shoulder without neurovascular deficits, and unstable joint (fractures) without neurovascular deficits
   - Maxillofacial trauma: facial lacerations, such as those requiring surgical repair, isolated or isolated (both fractures with or without dislocations, or isolated tears
   **YES**

5. Consider Co-morbid factors
   Geriatric trauma clinical judgment
   **NO**

6. TRANSFER to the closest Level IV Trauma Center or higher depending on location according to the Regional Trauma Plan or the facility of the patient's choice

7. **RAPID transport to the designated Level II, III, or Regional Level III Trauma Center according to the Regional Trauma Plan but may be stabilized at a Level III or IV facility depending on location and time and distance to the higher level trauma center.
   Air Renduence may be necessary considering time & distance constraints. If conditions do not permit air transport then consider ALS rendezvous. Stabilization may occur in the field or at the nearest appropriate facility.
   Combination of burns > 10% or significant burns involving face, airway, hands, feet, or genitalia without significant trauma transport to regional Burn Center. Burns > 10% with significant trauma transport to trauma center.

8. **INITIATE Trauma Treatment Protocol**
   **YES**
   **PROMPT** transport to the designated Level IV Trauma Center or higher depending on location according to the Regional Trauma Plan

9. **CONSIDER** Co-morbid factors
   Geriatric trauma clinical judgment
PEDIATRIC (≤ 16 YEARS) PRE-HOSPITAL TRIAGE AND TRANSPORT GUIDELINES
Oklahoma Model Trauma Triage Algorithm

- Inability to Secure Airway
  - Traumatic Arrest
    - Yes: Go Directly to Nearest Appropriate Facility

**PRIORITY 1**

**Physiological Compromise Criteria**
- Hemorrhage: Compressible/Exsanguination, BP < 90mm Hg
- Bleeding: Significant or profuse
- Airways: Incomplete airway, stridor, cyanosis
- Pulse: Mild tachycardia
- Respiratory: RR < 10 or > 25 breaths/min, intubation > 35 in infant < 1 yr
- Altered level of consciousness, GCS < 14

**Anatomical Injury**
- Penetrating injury of head, neck, chest/abdomen, extremity, perineum, or abdomen
- Combination of burns > 10% or significant burns involving face, hands, feet, or genitalia without significant trauma transport to Burn Center or OUMC Children’s Hospital. Burns > 10% with significant trauma transport to trauma center.
- Amputation above/knee or ankle
- Periarticular or suspected spinal fracture w/neurological deficit
- Fracture: Neck, pelvis, or spine
- Two or more proximal long bone fracture (upper arm/leg)
- Any open or suspected depressed skull fracture
- Unstable pelvis or suspected unstable pelvic fracture
- Tenderness/distal abdomen
- Crushed, degloved, or mangled extremity
- Pediatric Trauma Score ≤ 5

**Rapid Transport Protocol**
- Activate Trauma System
- Transport to the designated Level II or III Trauma Center according to the Regional Trauma Plan but may be stabilized at a Level III or IV facility depending on location and time and distance to the higher level trauma center.
- Air Rendezvous may be necessary considering time & distance constraints. If conditions do not permit air transport consider ALS rendezvous. Stabilization may occur either in the field or at the nearest appropriate facility.
- Combination of burns > 10% or significant burns involving face, hands, feet, or genitalia without significant trauma transport to Burn Center or OUMC Children’s Hospital. Burns > 10% with significant trauma transport to trauma center.

**PRIORITY 2**

**Risk of Serious Injury - Single System Injury**
- Patients with potentially life-threatening injuries due to a high impact event (positive mechanism of injury) or with a less severe single system injury, but currently with no physiological abnormalities or significant anatomical injury.
- Ejection from an enclosed vehicle
- Auto-pedestrian or motorcycle crash with significant impact > 30 mph
- Falls greater than 10 feet or distance of 3.3 times height of patient
- Significant assaults or abrasions
- High risk auto crash
- 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 impact event), isolated joint dislocations/knees, hip, elbow, shoulder, without neurovascular defects, and unstable joint (fracture) injuries without neurovascular deficit.
- Maxillofacial trauma: Facial fractures, including open or isolated maxillofacial, isolated open fractures or isolated edentulous mandible with or without antemortem, or avulsed tooth.
- Pediatric Trauma Score 6-8

**Initiate Trauma Treatment Protocol**
- Prompt transport to the designated Level II Trauma Center or higher depending on location according to the Regional Trauma Plan.

**PRIORITY 3**

- Coma
- Co-morbid factors and Gestalt-CMS clinical judgment
- Pediatric Trauma Score 5-12

**Transport**
- To the closest Level I Trauma Center or higher depending on location according to the Regional Trauma Plan or the facility of the patient’s choice.
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

- 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

- 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

- Panfacial trauma with LeFort type (I, II, or III) or zygomaticomalar fracture with mandibular fracture
- Bilateral fracture of the mandible with full symphaseal 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

- 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

- Isolated anterior fontal 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
- 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
- Moderate crush injuries
- Open fractures of carpals or metacarpals, proximal digits
- Multiple angulated and/or displaced fractures or dislocations >30°
- 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
- 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
- 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.

**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.

**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.

**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-Star 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://www3.emsystem.com/

## Statewide Oklahoma

**Grace Pelley (gracewest)**

### Setup View

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### Custom View

- **1ST FRANCIS-Priority I & II / OSU MED CTR-Priority II**
- **1 OUMC**

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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
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 systems, 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.

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

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

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<th><strong>Respiratory Distress and/or Hemodynamic Instability</strong></th>
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<td>SBP consistently &lt;90 or persistent tachycardia following 2 L crystalloid</td>
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<td>Respiratory distress with rate &lt;10 or &gt;29</td>
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<th><strong>Multi-System</strong></th>
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<td>Significant injury to 2 or more body regions</td>
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<td>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</td>
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<td>Head, neck, chest/abdomen or extremities proximal to elbow or knee</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Spinal</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspected or diagnosed fracture with neurological deficit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Thoracic</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Major chest wall or pulmonary injury with respiratory compromise</td>
</tr>
<tr>
<td>Wide mediastinum or suspected great vessel, tracheobronchial, or esophageal injury</td>
</tr>
<tr>
<td>Cardiac injury (blunt or penetrating) including tamponade</td>
</tr>
</tbody>
</table>

### 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 ≤ 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.

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
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- Major tissue necrosis
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:
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 lifethreatening 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 consultations.
- 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 referring 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, MCI, 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
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- 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 ≤ 10 or deterioration of 2 or more points
- Penetrating/open head, neck injury or depressed skull fracture
- Neurological deficits/alerting 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
– **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

<table>
<thead>
<tr>
<th>System:</th>
<th>Patient Priority:</th>
<th>Adult / Peds</th>
<th>Prioritization Criteria (TReC worksheets):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi/unstable</td>
<td>P-1</td>
<td>Adult</td>
<td>≥ 16 y.o. &amp; any &quot;box&quot; checked on P-1 page</td>
</tr>
<tr>
<td>Multi/unstable</td>
<td>P-1</td>
<td>Peds</td>
<td>≤ 16 y.o. &amp; any &quot;box&quot; checked on P-1 page</td>
</tr>
<tr>
<td>MOI or SS</td>
<td>P-2</td>
<td>Adult</td>
<td>No P-1 &quot;Boxes&quot;, at least one P-2 box</td>
</tr>
<tr>
<td>MOI or SS</td>
<td>P-2</td>
<td>Peds</td>
<td>No P-1 &quot;Boxes&quot;, at least one P-2 box</td>
</tr>
<tr>
<td>MOI or SS</td>
<td>P-3</td>
<td>Adult</td>
<td>No P-1 or P-2 &quot;Boxes&quot;</td>
</tr>
<tr>
<td>MOI or SS</td>
<td>P-3</td>
<td>Peds</td>
<td>No P-1 or P-2 &quot;Boxes&quot;</td>
</tr>
<tr>
<td>ORTHO</td>
<td>P-3</td>
<td>Both</td>
<td>No P-1 or P-2 &quot;Boxes&quot;</td>
</tr>
<tr>
<td>HAND</td>
<td>P-1</td>
<td>Both</td>
<td>See &quot;Hand Injury&quot;</td>
</tr>
<tr>
<td>HAND</td>
<td>P-2 &amp; P-3</td>
<td>Both</td>
<td>See &quot;Hand Injury&quot;</td>
</tr>
<tr>
<td>MAXILLOFACIAL</td>
<td>P-1</td>
<td>Both</td>
<td>Requires OMF Surgeon</td>
</tr>
<tr>
<td>MAXILLOFACIAL</td>
<td>P-2 &amp; P-3</td>
<td>Both</td>
<td>Requires Consultation</td>
</tr>
<tr>
<td>BURNS</td>
<td>P-1</td>
<td>Adult</td>
<td>Requires Immediate care by burn specialist</td>
</tr>
<tr>
<td>BURNS</td>
<td>P-1</td>
<td>Peds</td>
<td>Requires Immediate care by burn specialist</td>
</tr>
<tr>
<td>BURNS</td>
<td>P-2</td>
<td>Adult</td>
<td>Requires urgent consultation &amp; poss. transfer</td>
</tr>
<tr>
<td>BURNS</td>
<td>P-2</td>
<td>Peds</td>
<td>Requires urgent consultation &amp; poss. transfer</td>
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<tr>
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<td>Peds</td>
<td></td>
</tr>
</tbody>
</table>

#### 2nd - Select Appropriate Hospital Type

<table>
<thead>
<tr>
<th>Disposition by Hospital Level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closest Level I or Regional Level III</td>
</tr>
<tr>
<td>St Francis (Region 7-Tulsa) / OU (Region 8-OKC)</td>
</tr>
<tr>
<td>Closest Level III in Region (with appropriate on-call capability)</td>
</tr>
<tr>
<td>-Spinal Imaging capabilities, EP, Orthopedics</td>
</tr>
<tr>
<td>-Thoracic Imaging capabilities, EP, GS</td>
</tr>
<tr>
<td>-Abdominal/Pelvic Imaging capabilities, EP, GS</td>
</tr>
<tr>
<td>-CNS Imaging capabilities, EP</td>
</tr>
<tr>
<td>-Skeletal Imaging capabilities, EP, Orthopedics</td>
</tr>
<tr>
<td>-MOI Alone - Imaging capabilities, EP</td>
</tr>
<tr>
<td>-Hand, OMF, Burn, OB - See specific single system flow diagram</td>
</tr>
<tr>
<td>St Francis (Region 7-Tulsa) / OU (Region 8-OKC)</td>
</tr>
<tr>
<td>Closest Level III</td>
</tr>
<tr>
<td>Closest Level III</td>
</tr>
<tr>
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</table>

#### 3rd - Determine Location

<table>
<thead>
<tr>
<th>Hospital Selection Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(check EMResource for availability)</td>
</tr>
<tr>
<td>Hand Surgeon On Call</td>
</tr>
<tr>
<td>Region 1, 3, 6, 7</td>
</tr>
<tr>
<td>Region 2, 4, 5, 7</td>
</tr>
<tr>
<td>Closest ORTHO On Call</td>
</tr>
<tr>
<td>check EMResource for ORTHO capability</td>
</tr>
<tr>
<td>OMF Surgeon On Call</td>
</tr>
<tr>
<td>Phone to phone consult</td>
</tr>
<tr>
<td>Region 7-Tulsa - &quot;On call&quot; Level II or Level III</td>
</tr>
<tr>
<td>Region 8-OKC - &quot;On Call&quot; Level II or Level III</td>
</tr>
<tr>
<td>Consult w/ closest &quot;on call&quot; Maxillofacial, per EMResource</td>
</tr>
</tbody>
</table>

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

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
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:

Oklahoma State Department of Health
Emergency Systems
1000 NE 10th Street
Oklahoma City, OK 73117-1299

Phone: (405) 271-4027
Fax: (405) 271-4240