

# Trauma System

## GUIDELINES FOR FIELD TRIAGE OF INJURED PATIENTS:

### RED CRITERIA

#### High Risk for Serious Injury

##### Injury Patterns

- Penetrating injuries to head, neck, torso, and proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Chest wall instability, deformity, or suspected flail chest
- Suspected pelvic fracture
- Suspected fracture of two or more proximal long bones (humerus or femur)
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Active bleeding requiring a tourniquet or wound packing with continuous pressure

##### 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 < 70 mmHg + (2 x age in years)

###### Age 10 - 64 years

- SBP < 90 mmHg **OR**
- HR > SBP

###### Age ≥ 65 years

- SBP < 110 mmHg **OR**
- HR > SBP

*Patients meeting any of the above RED criteria should be transported to the highest-level trauma center available.*

### YELLOW CRITERIA

#### Moderate Risk for Serious Injury

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

##### EMS Judgement

###### 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**

*Patients meeting any of the above YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be transported to a trauma center (depending on Emergency Medical Services Advisory Board (EMSAB) plan, need not be the highest-level trauma center). Consider burn and pediatric capabilities as appropriate.*

## A. MEDICAL DIRECTION:

1. Off-line medical direction for trauma patients is controlled by the Treatment Protocols.
2. On-Line Medical Consult (OLMC) is controlled by the TCC and its protocols.
3. OLMC does override off-line medical direction. Any instances where this occurs will be reported to the EMS Office.

## B. COMMUNICATIONS:

1. Communications from the EMS Clinician at the scene to the TCC:
  - a. It is essential that early communications be established with the TCC concerning trauma patient(s).
  - b. After assessing a trauma situation and making the determination that the patient should enter the Trauma System, the EMS Clinician who is designated will contact the TCC by 800 MHz (on the TRAUMA talkgroup); the HEAR System; or cellular phone at the earliest practical time.
  - c. The EMS Clinician shall provide the TCC with the following information:
    - ✓ Unit number, identity, and certification level of person making contact.
    - ✓ Location of the incident, street address if appropriate.
    - ✓ Number of patients. Follow Multiple Casualty Incident protocol, if applicable.
    - ✓ Age and sex of the patient(s).
    - ✓ Trauma System entry criteria (be as specific as possible).
    - ✓ Trauma Band number(s).
    - ✓ Patient(s) vital signs, specify if not taken or not present.
    - ✓ Approximate ETA of patient(s) to Trauma Center; include loading time if appropriate.
    - ✓ Patient destination based on incident location or request.
2. Communications from the TCC or from OLMC to EMS Clinicians in the field:
  - a. The TCC will inform the EMS clinician if more information is needed by the receiving trauma center.
  - b. The TCC will inform the EMS Clinician if the destination trauma center is unable to receive the patient and will assist in designating an alternate destination.
  - c. In the event that there are multiple Trauma System entries, TCC will assist the EMS clinician at the scene in determining the destinations of all patients.
  - d. If the EMS Clinician contacting the TCC needs OLMC regarding care of the trauma patient, a physician at the TCC will offer direction using the EMSAB approved Trauma protocol as a guide.
3. Level-I trauma centers will be notified immediately by the TCC when a trauma patient has been identified and is bound for their facility.
  - a. Level-I trauma centers are encouraged to monitor the (Portland) 800 MHz Trauma talkgroup to ensure early notification when ambulances have short transport times.

- b. At No Time will the Level-I facility transmit on the Trauma talkgroup.
  - c. If more information is needed, communications shall be directed through the TCC.
4. Level-I trauma centers are responsible for notifying the TCC if they are unable to accept a trauma patient directed to their facility because of unexpected or expected patient arrivals or multiple patient scenes. Level-I trauma centers should be prepared to make this notification immediately in order to facilitate the re-direct of ground or air ambulances.
  5. Communications from the TCC, or from OLMC to the receiving trauma center:
    - ✓ Estimated time of arrival at the trauma center
    - ✓ Location of the incident.
    - ✓ Number of patients in route to the trauma center
    - ✓ Age and sex.
    - ✓ Trauma System entry criteria (also a brief description of each patient(s) condition).
    - ✓ Trauma Band number(s).
    - ✓ Patient vital signs, specify if not taken or not present.
    - ✓ Any other pertinent information received from the scene.

## C. TRAUMA CENTER DESTINATION:

1. All Trauma System entry patients should be transported to a Level-I trauma center unless advised by OLMC or under the following circumstances:
  - a. If unable to establish and maintain an airway, the nearest hospital is appropriate to obtain definitive airway control.
    - i. In this event, the TCC shall be contacted by the EMS Clinicians.
    - ii. The TCC will contact the receiving facility with patient information and ETA.
  - b. A Level-III hospital is appropriate if the expected scene and transport time to a Level-I facility is greater than 30 minutes and the Level-III hospital is closer.
  - c. A Level-IV hospital is appropriate for immediate evaluation and stabilization if the expected scene and transport time to a Level-I, -II, -III is greater than 30 minutes and the Level-IV hospital is closer.
2. The designated trauma center destination from the scene, if by ground ambulance, is to be determined based on the following criteria.

**Legacy Emanuel Hospital Service Area:** Patient origin on or north of: Tualatin Valley Highway beginning at the West city limits of Hillsboro, to Canyon Road, Canyon Road to Highway 26, to I-405, I-405 to NW Lovejoy, NW Lovejoy across the Broadway Bridge to the East bank of the Willamette, and South on the riverbank to Burnside. From this point, all patients North of, but not on the following line are to be transported to Emanuel: East on Burnside to NE Sandy Blvd, Sandy to NE Glisan at its intersection with 21st, and then East on Glisan St. to 242nd Ave in Gresham.

**Oregon Health & Science University Hospital Service Area:** Patient origin on or South of Glisan St. beginning at 242nd Street in Gresham, West on Glisan St. to Sandy Blvd at its intersection with 21st, Sandy Blvd. to E. Burnside, then West on Burnside to the East Bank of the Willamette, and North along the riverbank to the Broadway Bridge. From this point, all patients South of but not on the following line will be transported to University: West on the Broadway Bridge to Lovejoy, to I-405, to Highway 26 and then South of but not including Highway 26, to Canyon Road, to Tualatin Valley Highway to the west city limits of Hillsboro.

3. Patient or Guardian request: If the alert, unimpaired patient, or his/her unimpaired guardian, demands transport to a specific hospital, the EMS Clinician must honor that request and notify the TCC immediately. Any deviation from this transport protocol must be fully documented.
4. Outside of Catchment Area: If the Trauma System patient is being transported from a scene outside of the service areas described above, the patient destination is to be the Level-I trauma center in whose service area the main thoroughfare used by the ambulance to enter Portland is located.
5. Multiple Patients: In the event that multiple patients are to be transported from the same scene, all patient destinations are to be assigned to the above service areas, with the following exceptions:
  - a. The designated trauma center advised the TCC that the facility cannot accept and care for additional patients. The TCC will assist the EMS Clinicians in determining patient destinations.
  - b. If there are more than two unstable trauma patients ready to be transported from the same scene, the first two will go to the Level-I facility designated by the above service area, and TCC will direct the next patients to the other Level-I hospital.
6. If the patient is transported from the scene by helicopter ambulance, the destination will be determined by the flight crew using the following criteria:
  - a. Regardless of patient origin, the patient destination is, generally, to be alternated between the designated Level-I trauma centers.
  - b. If two patients are transported in the same flight, they will both be brought to the same Level-I trauma center (based on rotation).
  - c. In the event that the designated Level-I trauma center, which is to be the patient destination, is unable to accept the patient(s), the TCC will assist the flight crew in determining patient destination.

## D. MODE OF TRANSPORT:

1. Helicopter ambulance services should be used if it has the potential to save 10 minutes in the patient's prehospital time. This is usually achieved whenever the ground transport time will exceed 25 minutes (scene is > 15 miles from Portland, or other circumstances exist). This information is not intended to define an area in which a helicopter may not be used since there are exceptions based on major arterial routes, time of day, weather, and other factors especially close to the lines. Judgement should be used, based on specific scene circumstances.
  - a. Inner "Limited Use" Zone: [up to 15 nautical miles].  
Possible exceptions which might warrant use of the helicopter:
    - i. Multiple patient incident.
    - ii. Extended extrication, resulting in extended scene times.
    - iii. Traffic impediments, such as snowy or icy roads, commuter traffic congestion, and obstructed scene.
    - iv. High system demands.
    - v. Difficulty for ground ambulance access to the scene.
  - b. Outer Zone: [over 15 nautical miles].  
Special considerations:
    - i. Inclement weather that may prevent flight, (snow, ice, fog, etc.).
    - ii. Helicopter may be unavailable.
    - iii. Consider Landing Zone proximity to the scene and consideration of an intermediate rendezvous point between the scene and hospital.
    - iv. On main arterial roads, consider possibility that the helicopter may not be able to save time.
    - v. It may be appropriate to activate the helicopter and to cancel if the patient is packaged, the ambulance is ready to transport, and the helicopter is not on scene.
    - vi. The helicopter may have multiple, simultaneous calls for service and may need to triage use.
  
2. Dispatch Procedures:
  - a. Standby or activation of helicopter ambulance services will be requested through "Dispatch."
  - b. Any person who has had first aid or medical training may put helicopter ambulance services on standby.
  - c. Only emergency responders may activate helicopter ambulance services, requesting the helicopter through EMS Dispatch.
  - d. Units may cancel helicopter ambulance services if it is determined that they are not needed on scene.

## **E. PATIENT EVALUATION PROTOCOL:**

Treatment priority should be approached in this order:

1. Control of hemorrhage
2. Airway (with control of the cervical spine). If unable to establish and maintain an adequate airway, the patient should be transported to the nearest acute care facility to obtain definitive airway control.
3. Breathing
4. Circulation
5. Disability assessment (GCS, pupil size and reactivity, motor function)
6. Exposure and temperature control
7. Detailed head to toe exam
8. Splinting of suspected fractures

## **F. SCENE TIME:**

1. After gaining access to the patient, scene time should not exceed ten (10) minutes for any patient who is entered into the Trauma System.
2. Establish vascular access and initiate other care once in route to the trauma center.