



TETAF Trauma Activation Guidelines



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Trauma Activation Guidelines

Developed by
Texas EMS Trauma & Acute Care Foundation Trauma Division

CONTENT

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Development of the Trauma Team Activation Criteria

Trauma patients require specialized treatment and access to care. Available literature strongly supports the belief that trauma-related mortality can be reduced through early definitive care delivered via a multidisciplinary approach. Every health care facility with an interest in caring for the injured should evaluate its internal human and facility-based resources and develop a protocol for appropriate multidisciplinary team mobilization.



Development of the Trauma Team Activation Policy

Building the Trauma Team Activation Policy for hospitals is an internal hospital/Trauma Systems Committee discussion. The primary goal of trauma team activation criteria is to ensure that the resources necessary to address the clinical needs of injured patients are immediately available.

Protocols for trauma team activation should be driven by a number of factors to include defining the most severely injured patients and determining the immediate resource needs to deliver optimal care to the patient. In 1987, the American College of Surgeons released its “Optimal Resources” guide introducing three “domains” of criteria:

1. **physiologic,**
2. **anatomic, and**
3. **mechanism of injury.**

These criteria are critical in creating a step-by-step process for field facility triage. This was the first triage scheme to make provisions for comorbidity and extremes of age. While the initial version of the field triage decision scheme has been modified over time, the concept of stratifying injury significance based on the three domains of criteria has remained a staple in both the pre-hospital and emergency center environment.

The hospital’s activation policy is based on the reported mechanism of injury, physiologic criteria, anatomic criteria or special considerations. Hospital staff may rely on a report from EMS or the presenting symptoms of a patient arriving by personal vehicle to trigger trauma team activation.

Activating or mobilizing the trauma team to provide immediate resuscitation to the seriously injured trauma patient is vital to both saving patients’ lives and the efficient functioning of the trauma hospital.

Policies are needed to define the hospital’s trauma activation criteria and process and to document

expectations for members of the trauma team. When developing these two policies (Trauma Team Activation Policy and Roles and Responsibilities of the Trauma Team Members Policy), specify the following:

1. **When the team must be assembled (activation criteria as determined by your internal policy);**
2. **Who is to respond (multidisciplinary team members); and**
3. **How they are to be notified (overhead, pager, etc.).**

These policies should build upon existing facility-specific internal operating procedures and staffing resources.

Levels of Response

Some trauma centers have a single level of trauma activation while others may have multiple tiers, usually two or three. All levels are based specifically on the hospital resources available to the trauma patient and the patient’s physiological status. The tiers and team composition for each must be specifically defined in policy and monitored through the trauma quality assurance process. Using a defined multidisciplinary approach to care will limit the waste of resources caused by excessive team mobilization (over-activation) while ensuring resources are available to prevent delays in care (under-activation.)

Level III facilities may adopt a multi-tiered system. The highest level of activation usually is reserved for the sickest patients based on physiologic criteria. The second highest activation may be based on mechanism of injury, anatomic criteria and/or special considerations. The composition of the trauma team responding will be based on the specific needs of the patient. These may include in-house or on-call surgeons, emergency physicians, nursing staff, respiratory staff, laboratory staff and imaging staff.

In most cases Level IV facilities will adopt a single-tiered system based on their resources. These resources must include an emergency medicine physician, trauma nurses

Section 2

and both imaging and laboratory staff. Larger Level IVs with greater resources may activate more similarly to Level IIIs. The trauma facility's internal policy determines a single-tiered or a multi-tiered system response.

Information from pre-hospital care providers is useful for guiding the appropriate tier of response and for assembly and preparation of the trauma team.

The structural design of trauma team response levels or tiers and the composition of the team are institution specific, and based on available resources.

It is unlikely that a rural Level IV facility will ever have a trauma surgeon as a member of the trauma team at any tier of activation. However, the hospital may stage its response levels to require all ancillary departments to attend a high-level activation, and only require radiology to attend lower-level activations. Some facilities may choose to use only one level of activation for all trauma patients meeting activation policy minimum criteria.

Highest Level of Activation – The Major/Severe Trauma Patient

When a major/severe trauma patient is identified, the highest level of activation is made. Defining a major or severe trauma patient may be based on many factors and is validated by the facility's internal policy; however, there are defined minimal criteria that the hospital's policies must include.

According to the American College of Surgeons' *Resources for the Optimal Care of the Injured Patient* (2006), the minimal criteria for the definition of a major trauma patient include:

1. **Confirmed systolic blood pressure of <90 mmHg in adults and age-specific hypotension in children;**
2. **Respiratory compromise, obstruction or intubation;**
3. **Use of blood products to maintain vital signs in patients transferred from other hospitals;**
4. **Discretion of the emergency physician;**
5. **Gunshot wounds to abdomen, neck or chest; and**
6. **Glasgow Coma Score <8 with mechanism attributed to trauma.**

Whether a facility employs a single- or multi-tiered trauma team activation protocol, these six criteria must be contained within its highest tier. If a facility uses a single-tiered system, these six must be included.

The highest level activations use all resources and are the most stringent with regard to response times. In-house response must be within 15 minutes of notification. Off-campus team response must be within 30 minutes of patient arrival. These response times must be defined in both the Trauma Team Activation Policy and the Roles and Responsibilities of the Trauma Team Policy.

As defined in hospital policy, the highest level of activation is based on physiologic criteria and may include special considerations. This level includes a full team response with a surgeon, emergency physician, trauma-trained nurses, imaging department team support, laboratory team support and respiratory team support. Frequently this level also will include social services, spiritual services and additional support staff as needed. The policy defining this process may include operating room activation, anesthesia and hospital administration.

Second-Level Trauma Activations – Urgent

The second level of response, defined in hospital policy, may include a partial team response and typically is based on anatomic criteria, mechanism of injury and/or special considerations. In-house response is within 15 minutes of notification. Off-campus response may be up to 60 minutes from notification of the urgent need for consultation for the patient. In most trauma centers, this activation level may not include the surgeon, but will include the emergency medicine physician to lead the response. The other team members will include trauma nurses and imaging and laboratory support staff. Other support may be activated as the need is defined in assessment after the patient arrives.

Third Level Activations – Trauma Evaluation or Consult

A third level of trauma team activation frequently is referred to as a trauma consult or trauma evaluation. This level uses fewer resources; a surgeon may or may not be required to attend, and response time requirements may be longer for some personnel.

Special Considerations

As trauma programs mature, additional criteria may be added based on identified trends or risk factors that contribute to morbidity and mortality. Some of the most common special circumstances that may increase the morbidity and mortality of the patient must be considered. Patient management frequently is modified based on these special considerations.

Age

Research documents that age significantly affects the outcome of patients in two categories:

- **Greater than 55 years old and**
- **Less than 15 years old.**

Adults older than age 55 are at increased risk for injury and death. Studies have shown that mortality increases 6.8 percent for every year of age after 65. Older victims who die from their injuries had a lower Injury Severity Score (ISS) than younger victims who died. Age also places trauma patients at risk for other comorbidities and poor outcomes. In pediatric patients, defined by the American College of Surgeons as children less than 15 years of age, severe injury is best identified by physiological criteria: systolic blood pressure, Glasgow Coma Score, respiratory rate, burns and paralysis.

Anticoagulation/Bleeding Disorders

Patients with coagulopathies or being treated with anticoagulants (warfarin, aspirin, etc.) are at increased risk for intracranial hemorrhage, increased severity of hemorrhage and associated morbidity and mortality. Additionally, the severity and rapidity of hemorrhage which can occur in this patient population increase the likelihood of long-term disability and death. Prompt radiological services, neurosurgical intervention and anticoagulant reversal may be required.

Burns

Based on recommendations of the ACS and American Burn Association, in the absence of other trauma, burn victims should be transferred to a burn center. Burn patients with concomitant traumatic injuries are at higher risk for morbidity and mortality, and will benefit from specialized burn care. However, if the non-burn injuries present the immediate greater risk, the patient should be stabilized at a trauma center prior to transfer to a burn center.

ESRD Requiring Dialysis

Patients with end-stage renal disease requiring dialysis are often coagulopathic with increased risk for hemorrhage and severity of hemorrhage, and potential increased morbidity and mortality. The need for frequent dialysis is an additional resource consideration.

Pregnancy More Than 20 weeks

Trauma to the pregnant female places both the mother and the fetus at risk, with the higher risk to the fetus. However, the primary resuscitation priorities continue to be toward the mother because of the complexity of anatomical and physiological changes associated with pregnancy; additional specialized obstetric care is warranted. The gestational age of 20 weeks is recognized as the earliest age of fetal viability. Incorporating the labor and delivery unit nurses into activations including this patient population will allow an additional level of expertise for patients. Activating this specialized support staff should incorporate fetal monitoring and fetal warming.

Time-Sensitive Extremity Injury

Open fractures or fractures with neurovascular compromise are at risk for infection. Musculoskeletal and vascular deterioration of the limb may require rapid intervention for limb preservation.

CPR and Blunt Force/Penetrating Trauma

Patients with CPR in progress in the context of blunt trauma are highly unlikely to benefit from immediate surgical intervention, which supports a lower-level trauma activation. However, patients with CPR in progress who have suffered a penetrating trauma may benefit from a higher level activation. In patients with penetrating trauma to the chest or abdomen, massive exsanguinations, hypotension unresponsive to crystalloids and a sudden loss of vital signs, survival to discharge rates of 8.3 percent have been published for those receiving an emergency thoracotomy. However, the argument can be made that only those with penetrating trauma may benefit from immediate surgical intervention, which warrants a high-level trauma activation.

Trauma Registry Data

Trauma team activation criteria should be based on regional injury patterns and should be adapted to the local case load. One of the best resources for this information lies within a facility-based trauma registry. A comprehensive review of this data will result in a better understanding of

the characteristics of injury in a specific region. Currently, there is no universal agreement as to what measurable outcome criteria (Injury Severity Score, admission to the intensive care unit, fluid resuscitation, early surgery, morbidity or death) accurately define those patients who benefit from the resources of a multidisciplinary team evaluation. However, regional injury patterns, trauma registry data and national standards should drive the development of the policy defining trauma activation criteria.

Regional/System Considerations

The resources and capabilities within the trauma region dictate the function of the trauma system as a whole. The trauma hospital's policies should be vetted through the Regional Advisory Council and the EMS providers serving the region. Education of both the RAC and EMS providers will ensure a system-wide awareness of the hospital's resources and assist in regional field triage protocols. Recognition that the trauma hospital is part of a dynamic system will allow its integration into the regional system which serves all trauma patients and ensures delivery of optimal patient care in the right place at the right time.

Over- and Under-Triage of Trauma Patients

When developing trauma activation criteria, it is important to consider the impact of over- and under-triage on the trauma team. Both over- and under-triage are expected; however under-triage is less desirable than over-triage. The tiered approach does somewhat offset over utilization of scarce resources such as physicians, surgical support and those that respond from off-site, and more readily accommodates the inclusion of special considerations into trauma activation criteria.

In spite of continued maturation, it is well reported that trauma team activation criteria that rely on physiology, anatomy and mechanism of injury result in substantial over-triage (activation of trauma team despite minor or moderate injury), perhaps as high as 70 percent. Over-triage is mainly a resource problem as assembly of the multidisciplinary team removes personnel from other important activities in the facility. Under-triage has the potential to delay diagnosis and/or treatment of a severely injured patient and may compromise clinical outcomes and increase trauma mortality. No current standards exist for acceptable over- or under-triage rates. The American College of Surgeons has suggested that an over-triage rate of 50 percent may be necessary to achieve an under-triage rate of 10 percent.



Policy Development

Per the essential criteria for Level III and Level IV trauma center designation in the state of Texas, policies are required that outline the facility's trauma activation criteria and the roles and responsibilities of the trauma team. The development of the Trauma Team Activation Policy should include the ACS minimal activation guidelines as well as criteria that may be unique to the facility.

Components of the TTA policy

- **How is the team is activated (beeper system, overhead paging, etc.) and how is the activation documented?**
- **Who has the responsibility of activating the team (EMS, emergency physician, ED charge nurse)?**
- **What is the procedure for simultaneous multiple trauma alerts?**
- **What are the expected response times for all trauma team personnel for all levels of activations?**
- **Are the levels of TTAs clearly defined in writing?
Are specific criteria for every level clearly defined?**

The special considerations previously discussed are some of the most frequently identified complications to the trauma activation criteria decision-making process. These considerations should not stand alone as activation criteria, but be evaluated in the context of physiologic, anatomic and mechanism of injury criteria to anticipate the likelihood of increased risk of morbidity and mortality that may warrant a more comprehensive response and evaluation than that of the general trauma patient.

Trauma activation criteria should be based on minimum ACS criteria and other national guidelines. Additional criteria should be based on available resources as identified through open discussions with trauma team members, medical direction and hospital administration.

The Trauma Team Roles and Responsibilities Policy

The facility's trauma team should be composed of members from all required disciplines. The resources and designation level of your facility determine the actual composition. At

a minimum, there should be at least one trauma-trained registered nurse and preferably two, the emergency physician and representatives from lab, radiology and respiratory therapy. Anesthesia and surgery staff should be included for the highest level of activation for facilities with these resources. The role of the trauma surgeon is defined by the level of designation of the facility. Team members should work together to rapidly assess and treat the trauma patient.

The hospital's Roles and Responsibilities of Trauma Team Members Policy should define each member of the team at each level; the roles, responsibilities and expectations for each team member; and the required response time for each. Building a policy including these expectations is critical to quality assurance processes, identification of opportunities to improve and monitoring non-compliance.

Components of the Roles and Responsibilities of Trauma Team Members Policy

- **The policy should define each member's role and responsibilities, and include physicians, surgeons, nursing, imaging staff, blood bank/laboratory staff, spiritual care, social services, hospital administration and any other members of the team. In addition, it should specify the expected response time for each member of the trauma team.**
- **The policy should define who is responsible for communicating with EMS regarding an in-bound trauma patient.**
- **How surgeons confirm they are aware of an activation should be defined, and to whom they communicate should be specified.**
- **The policy should define who/how the operating room and staff members are notified when they are needed as well as how they notify the trauma staff of their readiness and availability.**
- **Who is responsible for being the timekeeper should be specified as well as how times are annotated.**

Communication and Education

Critical to the success of a trauma team is ongoing education for physicians, hospital staff, EMS providers and ED personnel. The specifics the facility has defined to identify trauma patients, activate the appropriate team and ensure the patient receives the appropriate level of care necessary for the best possible outcome must be communicated.

It is critical to understand that the trauma hospital, regardless of the facility's designated trauma level, is only one component of the local/regional trauma system. Although the trauma center is a central piece of the system, it is imperative to pursue an ongoing working relationship between the facility and local EMS providers. Additional importance should be placed on fostering the working relationship between the facility's trauma service and its physicians, surgeons, administration, leadership and non-ED staff. With strong collaborative relationships, the facility's trauma team activation policies, guidelines and protocols can be mutually developed, implemented and improved.

Texas Department of State Health Services' regulations state that the criteria for a tiered activation must be clearly defined and continuously evaluated by the trauma performance improvement program. This indicates that the TTA criteria may be modified occasionally, which then dictates that the modifications are communicated to the ED staff, ED physicians and EMS providers. TTA education can be accomplished through the trauma service's ED physician representative, EMS representative, departmental in-services and EMS educational outreach.

Members of the trauma service staff should provide education regarding the hospital's trauma capabilities and physically meet with local EMS medical directors, EMS training personnel and EMT staff. This will enable EMS participation in the TTA development process, communicate unique concerns of the facility and EMS agency(s) and empower all participants in the TTA. If the trauma facility's resources do not allow for individual visits to EMS stations, it is suggested to have the trauma medical director and trauma program manager meet with the EMS medical director(s) and senior EMS administrative/

training personnel. This can be accomplished by having key EMS personnel as participants or members of the trauma center's Performance Improvement Committee(s) or chartering a specific committee comprised of trauma service and EMS personnel focused on "pre-hospital and ED" trauma performance improvement. The RAC may provide a forum to educate and discuss the facility's trauma capabilities and activation criteria.

Pre-Hospital Reporting

All EMS agencies must have a reliable means of communicating with each facility's ED. This frequently is accomplished through the use of 800 MHz radio networks. The ED physician should be informed immediately of an "in-bound" EMS patient who meets the facility's trauma team activation criteria and ideally the trauma team should be present prior to the patient's arrival. Trauma team activations must be based on the pre-hospital report if the patient arrives by EMS. The pre-hospital report is a critical piece of the trauma activation process and should be maintained in the trauma patient's records to identify conditions meeting trauma team mobilization criteria.

Arrivals by Privately Owned Vehicles (POV)

Upon recognition that a patient arriving by privately owned vehicle has triggered any of the criteria in the hospital's activation policy, the trauma team activation is made. Patients arriving by private vehicle are managed with the same processes as those activated by EMS. Delays in activation and arrival are justified through the PI process.

Trauma Team Notification

Each facility must ensure that reliable means of communication are established for notification of all members of the trauma team, including ED physicians, trauma surgeons, house supervisors, ED charge nurses, ED trauma nurses, respiratory therapists, imaging technicians, blood bank/lab technicians, security officers or whoever is on the facility's trauma team. A pager system, phone tree, overhead announcement or answering service may be used to communicate the TTA. The communication method should be reviewed frequently in the trauma service's PI matrix.

Admissions and Transfers

Trauma patients may be delivered to a facility without the resources to manage them at an optimal level. The RAC has systems in place to avoid delayed intervention; however, the best option under specific circumstances will require stabilization and transfer. Preparing in advance for such an event will ensure a rapid evaluation by the trauma team and transfer of the patient to the closest, most appropriate facility. Transfer plans between facilities need to be arranged in advance. Methods of transportation, communication and capabilities of tertiary centers must be defined within this transfer plan. The closest facility with the needed resources should be contacted for transfer.



Monitoring and Evaluation of Trauma Policies

The trauma activation and the roles and responsibilities policies are dynamic and should be analyzed and revised based on outcome measures. Outcome measures must be developed to monitor and drive trauma activation criteria.

Each facility may determine clear outcome measures to ensure the criteria remain appropriate and serve the needs of the patients. Once outcome measures are developed, over- and under-triage rates may be monitored and reported through the use of tools such as:

1. Cribari Matrix. In a multi-tiered activation criteria facility, over-triage rates may be determined by dividing the number of highest level team activations with ISS less than 16 by the total number of highest team activations within a specified time period. Under-triage rates may be calculated by dividing the total number of patients with an ISS of greater than 15 who were not activated at the highest tier by the total number of patients who were not activated at the highest tier. Example:

	ISS 0-15	ISS 16-75	Total
Full Trauma Activation	a	b	c
Limited or No Activation	d	e	f
Under-triage Rate	0.0%	Ideally \leq 5%	
Over-triage Rate	0.0%	Ideally \leq 50%	

2. Simple Grid. Another method of evaluating trauma team activation criteria is to set up a simple 2 x 2 grid to calculate sensitivity and specificity in the following manner, where each criterion deemed important to a facility may be substituted in row 1, columns 2 and 3:

	ISS > 15	ISS ≤ 15
Trauma Team Activation	a	b
No Trauma Team Activation	c	d

$$\text{Sensitivity} = a \div (b+c)$$

$$\text{Specificity} = d \div (b+d)$$

$$\text{Positive predictive value (PPV)} = a \div (a+b)$$

$$\text{Negative predictive value (NPV)} = d \div (c+d)$$

$$\text{Over triage} = 1 - [b \div (a+b)]$$

$$\text{Under triage} = 1 - [c \div (a+c)]$$

The choice of processes to monitor the criteria and analyze them based on outcomes is the decision of the trauma hospital. Multiple tools are available and should be chosen based on the needs of the trauma hospital. However, a continuous effort to revise the trauma hospital's criteria based on outcomes, regional resource changes and trauma registry evidence should be demonstrated.

Summary

There is no single definitive list of trauma team activation criteria that can be safely employed at all facilities. It is important that each trauma center continually evaluates its protocols and modifies them to meet the needs of its changing environment, health care capabilities and the patient. Regardless of what criteria are established, they should be easily interpreted, clearly documented and closely monitored. It is imperative that activation criteria be developed based on current national, state and regional guidelines (*see Reference Section 8, p. 15 for links to additional resources*).

Trauma program managers are encouraged to maintain an ongoing surveillance of trauma activation criteria as recommended by national organizations. These organizations periodically revise their recommendations. Hospital policies addressing trauma activation, trauma team roles and responsibilities, and admission/transfer guidelines should be revised as necessary to ensure maintenance of the current standards. Texas designated trauma facilities are required to review their policies annually and revise them as needed to comply with national standards.



Additional Resources

Links to Additional Resources

American Burn Association: www.ameriburn.org

American College of Surgeons – Committee on Trauma: <http://facs.org/trauma/index.html>

American Trauma Society: www.amtrauma.org

Association for the Advancement of Automotive Medicine: <http://aaam.org/>

Centers for Disease Control & Prevention, Guidelines for the Field Triage for the Injured Patient:
<http://www.cdc.gov/FieldTriage/>

Eastern Association for the Surgery of Trauma: <http://www.east.org/resources/treatment-guidelines/triage-of-the-trauma-patient>

Emergency Medical Treatment and Labor Act Guidelines: [emtala-interpretive-guidelines](http://www.emtala.org/interpretive-guidelines)

Emergency Nurses Association: www.ena.org

Resources for the Optimal Care of the Injured Patient 2006:
<https://web4.facs.org/ebusiness/ProductCatalog/ProductCategory.aspx?id=26>

Society of Trauma Nurses: <http://www.traumanurses.org/>

Texas Department of State Health Services, Office of Emergency Medical Services:
<http://www.dshs.state.tx.us/emstraumasystems/default.shtm>

Texas Trauma Registry: <http://www.dshs.state.tx.us/injury/default.shtm>

Sample Policies

To help others develop their trauma team activation criteria and policy, several Texas hospitals are sharing theirs. These models may facilitate the development of a single or tiered level of response. One example of an EMS Report Sheet/Trauma Triage Data form also is provided.

TETAF thanks the following hospitals for sharing their policies:

- Scott & White Hospital – Brenham
- Titus Regional Medical Center, Mount Pleasant
- United Regional Medical Center, Wichita Falls





SCOTT & WHITE
Hospital

Brenham

**TRAUMA ALERT Level 2 / TRAUMA STAT Level 1
WORKSHEET**

The nurse will use on all trauma related EMS reports and on all patients presenting with traumatic injury to determine the appropriate level of response & activate the trauma team to the appropriate level.

Trauma Alert Level 2 Criteria.

Trauma Alert (912) to be announced overhead.

Trauma Surgeon may be called by ED Physician.

Trauma Stat (911) Criteria

Trauma Stat Level 1 to be announced overhead.

The General Trauma Surgeon must be called in.

PLACE A CHECK IN ALL THAT APPLY:	√
GCS \leq 13 with mechanism attributed to trauma	
Motor Vehicle Crash with ejection, death in same vehicle or auto pedestrian	
Falls > 20 ft for adults or 2 x the height of the pedi patient age 6 or under	
MCC/ATV/Bike/Large Animal with ejection of rider	
Burns > 20% BSA for adults or > 10% BSA for the pedi patient age 6 or under	
Intubated trauma transfer with stable vital signs	
Stab wounds to neck, chest or abdomen (torso) with stable vital signs	
Blunt Force Trauma with CPR in progress upon arrival	
Elderly falls on blood thinners	
Judgment of the ED Physician	

PLACE A CHECK IN ALL THAT APPLY:	√
Systolic B/P < 90 on adults	
Age specific hypotension in children age 10 and under (70 + 2x age)	
Respiratory compromise or obstruction &/or intubated patient from the scene	
GSW to neck, chest or abdomen (torso)	
GCS \leq 8 with mechanism attributed to trauma	
Transferred in patient receiving blood to maintain vital signs	
Judgment of the ED Physician	

Trauma Flow Sheet to be used for all patient meeting criteria for activation of the Trauma Team for Trauma Alert (912) &/or Trauma Stat (911)when patient meets criteria for Trauma Alert/Trauma Stat

Date

Time

ED Physician Signature

Nurse Signature

Revised 9-12

**Titus Regional Medical Center
Trauma Department**

SUBJECT: Trauma Team Activation Criteria	REFERENCE:
ORIGINATED BY: Robin Gage RN	PAGE: 1 OF: 2
APPROVED BY:	EFFECTIVE:
CONCURRENCE:	REVIEWED: 6/08,2/10,5/13 REVISED: 1/06, 2/10

PURPOSE: To effectively manage major trauma patients, the trauma team must assemble quickly and mobilize resources essential to diagnosis and treatment. The established criteria will be utilized as a decision-making process for activating the trauma team.

DEFINITION:

POLICY: All trauma patients will receive appropriate and timely emergency care.

PROCEDURE: The decision to activate the trauma team can be determined by EMS (pre-hospital); ER physician or RN charge nurse, based on pre-hospital information or upon patient arrival.

1. Level II criteria indicates the patient may not require full trauma team activation or has sustained injuries that will require immediate transfer. The ER physician will assume responsibility for the patient and function as the team leader. Assessment will be completed upon arrival to the ED and the surgeon notified as indicated. Level I criteria signifies the necessity for immediate activation of the surgeon.
2. Injury Criteria for Level I Activation:
 - A. Multi-system trauma with unstable vital signs (B/P less than 90, GSC less than 12, and/or sustained heart rate greater than 140.)
 - B. Intubated or compromised airway (exception : isolated head injury)
 - C. Penetrating injury to neck, back, abdomen, genitalia, buttocks
 - D. Flail Chest
 - E. Unstable pelvis or suspected pelvic fractures with unstable signs or other injuries. (activate Orthopedic Surgeon also)
 - F. Amputations (excluding digits)
 - G. Arterial laceration

3. **Injury Criteria for Level II Activation:**
 - A. Two or more long bone fractures (Activate Orthopedic Surgeon also)
 - B. Isolated head injuries requiring Neurosurgical care
 - C. Major trauma patients less than 12 or greater than 65
 - D. Burns greater than 20% (2nd or 3rd degree) of BSA or involving airway, hands, feet, or genitalia
 - E. Pediatric patients with 2nd or 3rd degree burns greater than 10% BSA
 - F. Pregnancy greater than 24 weeks gestation with trauma injuries
 - G. Paralysis or other signs of spinal cord injury
 - H. Pediatric trauma with PTS score of less than 8

4. **Mechanism of Injury Criteria for Level II Activation:**
 - A. High Energy impact (rollover, head-on collision, etc.)
 - B. Falls greater than 2 times patient height
 - C. Ejection from vehicle
 - D. Collision with 20-inch intrusion into vehicle
 - E. Auto/Pedestrian
 - F. Any multi-victim collision/incident
 - G. Motorcycle, ATV, or bicycle crash greater than 20mph or with separation of rider from bike.

Note: A Level II activation may be changed to Level I at any time based on patient condition.

5. **Special Considerations:**
 - A. Deterioration in patient condition with decreasing GCS, vital signs, or other significant findings requires immediate consultation with a surgeon.
 - B. If the surgeon on call is not available, another surgeon will be notified. If the back-up surgeon is not available to respond to the trauma activation, transfer to a tertiary facility will be initiated immediately.

MATERIAL/EQUIPMENT:

REFERENCES: Resources for Optimal Care of the Injured patient 2006
Committee on Trauma/American College of Surgeons

EMS REPORT SHEET / TRAUMA TRIAGE DATA

Date _____ EMS Agency _____ Report called @ _____ ETA _____ Age: _____ Sex: M F

MECHANISM OF INJURY / CHIEF COMPLAINT

INJURIES SUSTAINED / ADDITIONAL COMPLAINTS

VITAL SIGNS: B/P _____ Pulse _____ Resp. _____ O₂Sat _____ Telemetry _____ GCS / RTS _____

TREATMENTS AND PTS. RESPONSE: ρ O₂ _____ ρ IV _____ ρ LSB _____ ρ C-collar _____ ρ CID _____

ρ Splint _____ ρ D-Stick _____ ρ Medicines _____

Orders Given _____ Room Assignment _____

Report taken by _____

CRITERIA FOR TRAUMA TEAM ACTIVATION

Any major trauma patient requiring surgical intervention for orthopedic injuries must be cleared by the General Surgeon prior to surgery.

Level I Activation Trauma Team and General Surgeon Only	Level II Activation Trauma Team Only	EMS Field Triage Criteria Level II Activation Trauma Team Only
1. Multi-system trauma with unstable vital signs (B/P less than 90, GCS less than 12, and/or sustained heart rate greater than 140)	1. Two or more long bone fractures	1. High energy impact (Rollover, head-on collision, etc.)
2. Intubated or compromised airway (exception : isolated head injury)	3. Isolated head injuries requiring neurosurgical care	2. Falls greater than two (2) times patient height
3. Penetrating injury to neck, back, abdomen, genitalia, buttocks	4. Major trauma patients less than 12 or greater than 65 years of age	3. Ejection from Vehicle
4. Flail Chest	5. Burns greater than 20% (2 nd or 3 rd degree) of BSA or involving airway, hands, feet, or genitalia	4. Collision with 20-inch intrusion into vehicle
5. Unstable pelvis or suspected pelvic fracture with unstable vital signs or other injuries	5. Pediatric patients with 2 nd or 3 rd degree burns greater than 10% BSA	5. Auto/pedestrian
6. Amputations (excluding digits)	6. Pregnancy greater than 24 weeks gestation with trauma injuries	6. Any multi-victim collision/incident
7. Arterial Lacerations	7. Paralysis or other signs of spinal cord injury	7. Motorcycle, ATV or bicycle crash greater than 20mph or with separation of rider from bike
	8. Pediatric trauma with PTS score of 8 or less	

Original 4/1999 Revised 8/2000 Revised 8/2001 Revised 3/2002 Revised 1/2005 Revised 1/2006 Revised 9/2008, Revised 12/2012



TRAUMA ACTIVATION CRITERIA

LEVEL I ACTIVATION

Airway

- Actual or potential airway compromise
- Intubated patient transferred directly from scene
- Intubated patient transferred from other facility with ongoing respiratory compromise (does **NOT** include intubated patients transferring from another facility who are now stable from a respiratory standpoint)

Circulation

- Pre-hospital CPR
- Confirmed hypotension
 - Adult SBP < 90 mm Hg
 - Child <1 year SBP < 70 or HR <100 or >190
 - Child 1-9 years—SBP<70 + 2 x age (in years) or HR <80 or >150
- HR > 130
- Transferred patient receiving blood to maintain vital signs

Disability

- GCS < 8 mechanism attributed to trauma

Event

- Falls > 20 feet or 2.5 times patient height
- **Penetrating Gun Shot Wounds** to Head, Neck, Trunk, Groin or Buttocks
- Major **electrical injury** with burn
- Injured **pregnant** patient with:
 - Vaginal bleeding **or**
 - Ruptured membranes

* **ED Physician's Discretion** (ED physician is responsible for calling Trauma Surgeon if activation is based on EDP discretion)

Level I: ED Physician must see within 5 minutes of arrival. Trauma Surgeon response (at bedside) ≤ 15 minutes from patient arrival. Activate based on EMS report if criteria are met.

LEVEL II ACTIVATION

- GCS < 13 with mechanism attributed to trauma
- Amputation proximal to wrist or ankle
- Penetrating Injury to head, neck and trunk (**non-GSW**)
- 2 or more proximal long bone fractures (**humerus or femur**)
- Open or displaced posterior pelvic fracture
- Burns >20% BSA (>10% if patient <6yr)
- *Persistent* limb paralysis or sensory deficit
- **ED Physician's Discretion** (ED physician is responsible for calling Trauma Surgeon if activation is based on EDP discretion)
Assume a high index of suspicion for injury and consider Level II Activation when the following mechanisms are associated regardless of known injuries:
 - Ejection from vehicle
 - Unrestrained rollover
 - Extrication time > 20 min
 - Death in same vehicle
 - Auto-pedestrian

Level II: ED Physician to see within 10 minutes. Notify Trauma Surgeon after initial assessment unless activation is downgraded (downgrade must be documented). Trauma Surgeon response (at bedside) ≤ 30 minutes from notification.

LEVEL III Consult

- Consult Trauma Surgeon for:
 - All other injured patients admitted or being transferred
 - All other injuries requiring a surgical evaluation
 - Any patient with trauma and significant co-morbidities

**Co-morbidities – COPD/CHF; Diabetes; Renal Failure; HTN; Anti-Coagulated state, etc)*

**Level III:
Trauma surgeon response (at bedside) ≤ 6 hours for patient being admitted.
Trauma surgeon response (at bedside) prior to disposition for patient being transferred.**

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any predated form is invalid.
Reviewed or Revised annually

Information Sources for This Publication

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