

Tailoring Trauma Team Activation (TTA) Levels and Criteria

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Objectives:

After attending this event, the participants should be able to:

- Discuss how to build trauma team activation levels
- Identify the components of trauma team activation criteria
- Define concepts of the trauma team activation policy
- List ways communication and education can improve care
- Improve activations through performance improvement (PI)

Why Activate

The **GOAL** of a Trauma Team Activation is immediately mobilize all necessary resources to care for the injured patients in an efficient and organized manner.

How to build or change your Trauma Team Activation levels and criteria

1. Decide on how many levels of response
2. Determine what Criteria you are going to use for your Trauma Team Activation
3. Trauma Team Activation Policy development
4. Communication and education of Trauma Team Activation

To tier or not to tier

- One activation level
- Multiple activation levels
- Consult

- All levels should be based on each hospital's specific resources available.
- Tiers and team composition need to be defined in policy
 - then monitored through the PI process.

Consider:

- To decrease over activation and waste of resources:
 - use a multidisciplinary team approach
 - while ensuring prevention of delays and necessary resources are available

Criteria Determination for your specific level

TTA decisions should
be driven by defining

1. Institution specifics
2. Determination of immediate services needed to care for the patient

1. Institution specific:

- ❖ Who at your facility can respond to activations?
- ❖ Can they be there in under 30 min?

2. Services needed for patient care:

- ❖ Who will need to respond?
- ❖ Does this change with criteria levels?

Criteria Determination for all Level designations

Know what your
minimum criteria
requirements are:

❖ Refer to ACS
resources for
optimal care for
minimum criteria

Table 2

Minimum Criteria for Full Trauma Team Activation

- Confirmed blood pressure less than 90 mm Hg at any time in adults and age-specific hypotension in children;
- Gunshot wounds to the neck, chest, or abdomen or extremities proximal to the elbow/knee;
- Glasgow Coma Scale score less than 9 with mechanism attributed to trauma;
- Transfer patients from other hospitals receiving blood to maintain vital signs;
- Intubated patients transferred from the scene, - OR -
- Patients who have respiratory compromise or are in need of an emergent airway
 - Includes intubated patients who are transferred from another facility with ongoing respiratory compromise (does not include patients intubated at another facility who are now stable from a respiratory standpoint)
- Emergency physician's discretion

<https://www.facs.org/-/media/files/quality-programs/trauma/vrc-resources/resources-for-optimal-care.ashx> page 38

Special Considerations

Examples:

- Age: >65 yrs. old or <15 yrs. old
- Anticoagulation/bleeding disorders
- Known cardiac, renal or pulmonary diseases, or high-risk meds or procedures
- Pregnancy >20 weeks
- Morbid obesity
- Burns/trauma combined
- Consider regional/system considerations

How to decide to activate

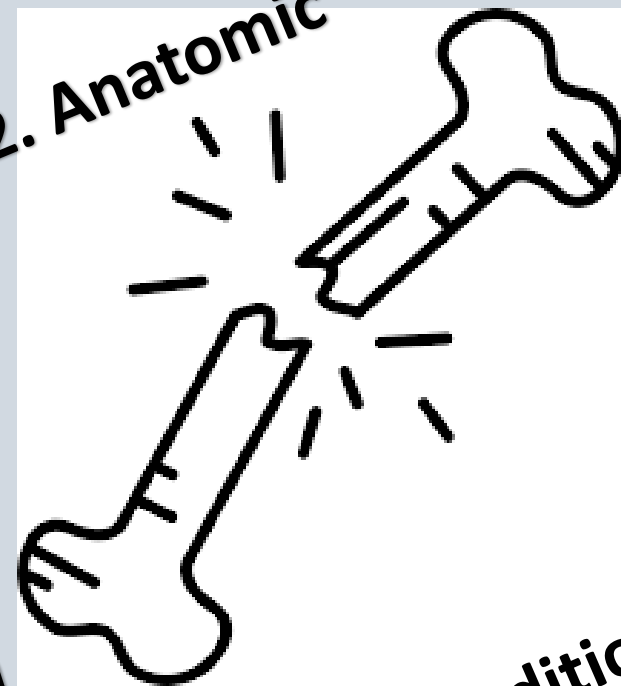
Typically, trauma centers have a tiered trauma activation policy that is based on predetermined criteria.

Which include:

1. Physiologic



2. Anatomic



3. Mechanism of Injury Criteria



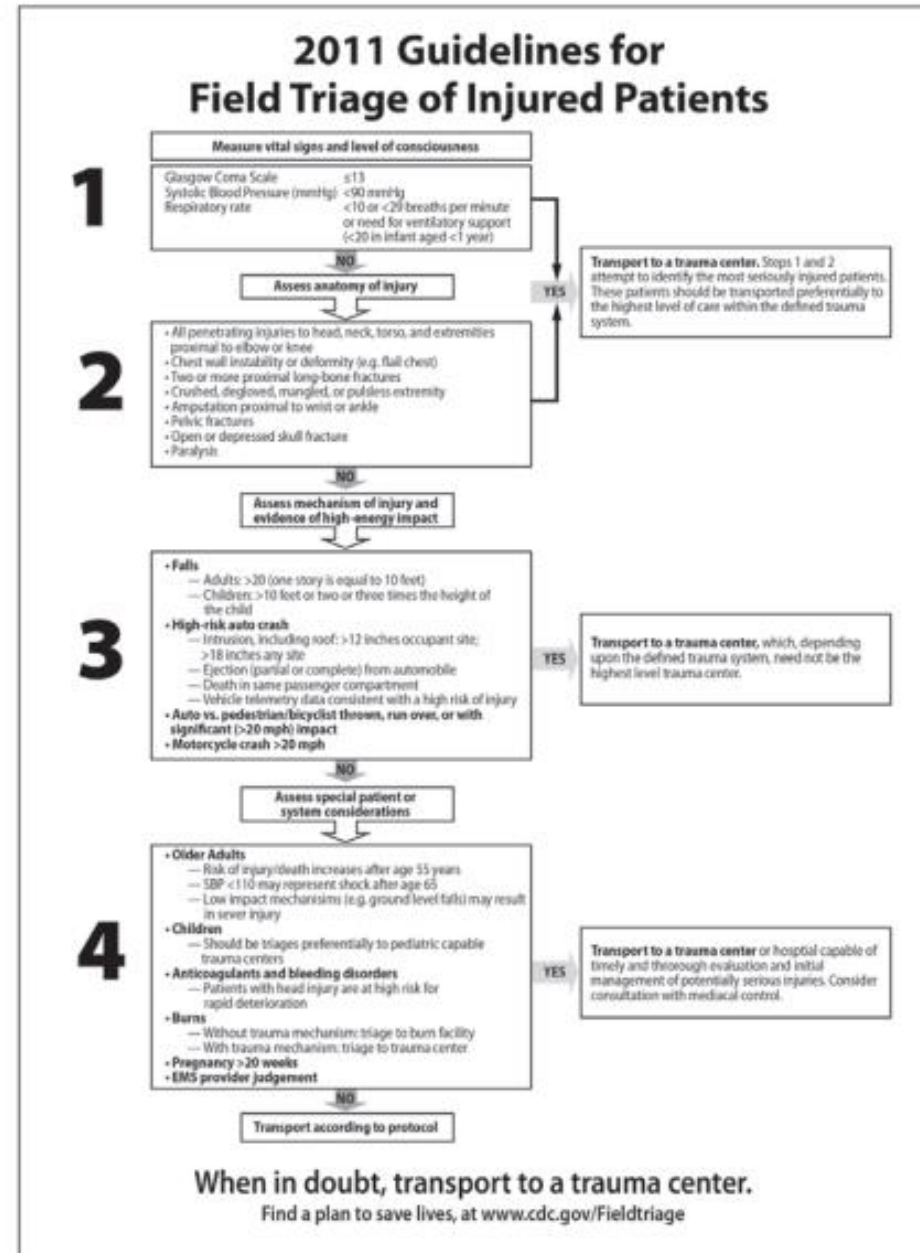
4. Comorbid Conditions



How to decide to activate

The field triage decision scheme, as outlined in **Figure 1, Chapter 3**, should be used to guide the levels of activation. (ACS Resources for optimal care of the injured patient 2014)

Figure 1



What to include in Activation Policy

Development

1. Components of Trauma Team Activation
2. Roles and responsibilities of team members
3. Education and communication of policy

Components of Activation Policy

1. Purpose/Scope

2. Definitions of

- Trauma Team activation criteria
- Trauma Team activation levels
- How an activation is initiated and communicated

Roles and Responsibility of Team

Include:

- Role description
- Responsibilities, spelled out
- Expectations:
 - Response times
 - Who responds to what level

Communication and Education

Successful Trauma Teams are continually providing

- Ongoing education and communication for hospital and pre-hospital staff about hospitals trauma capabilities and policy changes
- Education offerings or case reviews to improve patient care
- Hospital participation in local, regional and state trauma system
- General public education

Monitor and Evaluation of TTA

Due to the dynamic nature of trauma patients and care, it is important to continually evaluate:

- protocols
- policies
- activations
- roles
- responsibilities

1. Monitor criteria
2. Analyze
3. Revise based on
 - Analyzed outcomes
 - Trauma registry evidence
 - Regional resource changes

Goal rates for evaluation of TTA

Under-Triage Rate = Ideally $< 5\%$

Over-Triage Rate = $\leq 50\%$

Methods to analyze Activations

1. Cribari Method
2. Simple review
3. Simple grid

Cribari Matrix

❖ Cribari matrix has long been used to monitor and improve trauma activation performance

Uses data from the trauma registry to categorize pts by ISS and activation type.

Using this method scores pts into 2 categories, to answer the question

How often do we activate appropriately?

Cribari Matrix

	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 $\leq 50\%$	

Simple chart

- Review the each case against your current TTA (including pre-hospital record)
- If pt. met criteria and was activated care was appropriate
- If pt. met criteria and did not get activated = **Under Triage**
- This method may work better for facilities that have very few traumas.

Simple Grid

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

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

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

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

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

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

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

EXAMPLE	ISS > 15	ISS ≤ 15
TTA	5	3
No TTA	1	2
$\text{Sensitivity} = A \div (B+C) = 5 \div (3+1) = 1.25$		
$\text{Specificity} = D \div (B+D) = 2 \div (3+2) = 0.4$		
$\text{Positive predictive value (PPV)} = A \div (A+B) = 5 \div (5+3) = 0.625$		
$\text{Negative predictive value (NPV)} = D \div (C+D) = 2 \div (1+2) = 0.67$		
$\text{Over Triage} = 1 - (B \div (A+b)) = 1 - [3 \div (5 + 3)] = -0.625$		
$\text{Under Triage} = 1 - [C \div (A+C)] = 1 - [1 \div (5+1)] = -0.83$		

Now what to do with that information

1. Review cases

- Remember goal is
 - under triage (Ideally $\leq 5\%$)
 - over triage (Ideally $\leq 50\%$)

2. How to review

- Look at circumstances
 - Incomplete, inaccurate report
 - Vague presentation or details change

Now what to do with that information

3. Provide feedback

- Meet with staff one-one
- Provide education

4. Does activation criteria need to be redefined?

- Trauma committee meetings
- Reach out to similar size facilities, or facilities your transfer too

Tools

Minimum Criteria for TTA:

<https://www.facs.org/-/media/files/quality-programs/trauma/vrc-resources/resources-for-optimal-care.ashx> page 38

Field triage Guidelines:

<https://www.facs.org/-/media/files/quality-programs/trauma/vrc-resources/resources-for-optimal-care.ashx> Page 27

Cribari Matrix:

<https://thetraumapro.com/2016/11/28/the-cribari-grid-and-overundertriage/>

References:

<https://www.facs.org/-/media/files/quality-programs/trauma/vrc-resources/resources-for-optimal-care.ashx>

Dowell, B., Golder, D., Holmes, A., Jennings, S., Knox, C., Manley, C., ... Price, L. I. (2013, July). TETAF Trauma Activation Guidelines. Retrieved from <https://sk75w2kudjd3fv2xs2cvymrg-wpengine.netdna-ssl.com/wp-content/uploads/2016/03/trauma-activation-guidelines.pdf>

Fojut, R. (2018, February 9). Beyond the Cribari Grid: How to use statistical control to improve triage rates. Retrieved from <https://www.trauma-news.com/2015/02/beyond-cribari-grid-use-statistical-control-improve-triage-rates/>