MTQIP Program Manager Update

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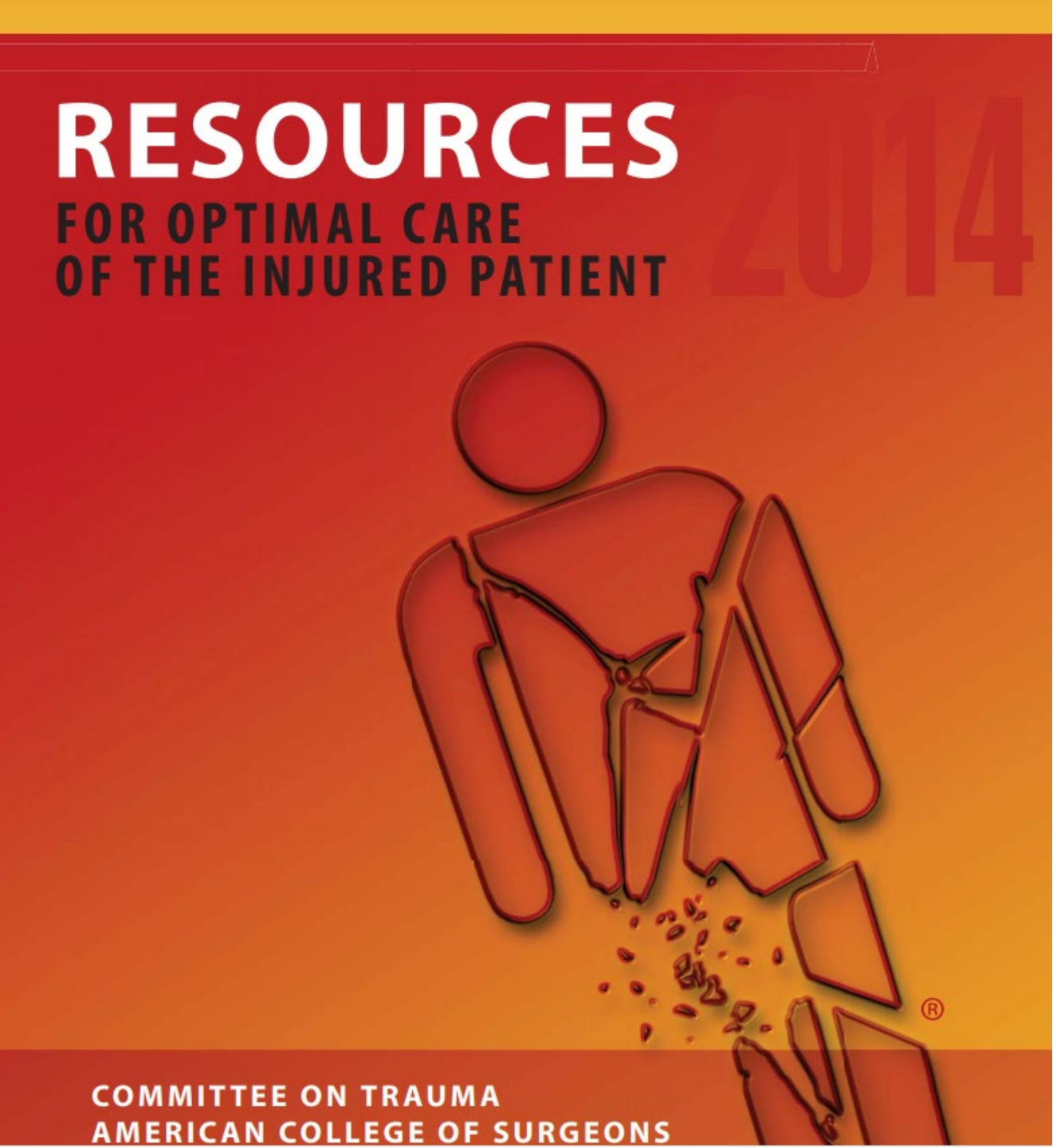
Trauma Activation Criteria: A Review of 34 Trauma Centers

Thank you to the MTQIP centers for generously sharing their activation criteria

Goal: Identify patterns and make recommendations for best practices

Disclaimer: This is my interpretation of center guidelines



Expectations

- Full Activations - Level I
  - Minimum 7 Criteria
  - Surgeon Response 15 min 80%
- Limited Activations – Level II
  - High risk mechanism criteria
  - Criteria set by center
  - Surgeon response set by center

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

To meet this requirement, most trauma centers have a multitiered trauma team activation protocol. Even though facilities may have different nomenclature to identify various activation levels, the intent is that there will be levels commensurate with "full" and "limited" activation levels, as described in Table 3. The limited activation criteria should be based on high-risk mechanisms of injury.

Level I Activations

In Level I and II trauma centers, the highest level of activation requires the response of the full trauma team within 15 minutes of arrival of the patient, and the criteria should include physiologic criteria and some or several of the anatomic criteria (CD 5–14). In Level III and IV trauma centers, the team must be fully assembled within 30 minutes (CD 5–15). The limited response criteria may include some anatomic criteria, as well as high-risk mechanisms of injury.

Table 3 An Example of a Tiered Trauma Team Activation Protocol

<table>
<tr><th colspan="3">FULL Trauma Team Criteria
Persons who sustain injury with any of the following</th><th>LIMITED Trauma Team Criteria
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<tr><td colspan="3">PRIMARY SURVEY: PHYSIOLOGIC</td><td rowspan="2">MECHANISM OF INJURY
• Falls: adult >20 ft; child >10 ft or 3× height
• Fall from any height if anticoagulated older adult
• High-risk auto crash with:
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- Ejection (partial or complete) from automobile
- Death in same passenger compartment
• Auto vs. pedestrian/cyclist thrown, run over, or with significant (>20 mph) impact
• Motorcycle crash >20 mph
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- Ejection from motorcycle, ATV, animal, and so on
- Striking fixed object with momentum
- Blast or explosion
• High-energy electrical injury
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• Penetrating injuries to the head, neck, torso, or extremities proximal to the elbow/knee
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• Two or more proximal long bone fractures (humerus or femur)
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The Minimum 7 – Full Activation

	Class I Criteria	Centers
1	BP<90	34/34
2	GSW	34/34
3	GCS <9	34/34
4	Transfer-blood	34/34
5	ETT scene	32/34
6	Resp Comp	34/34
7	EM discretion	34/34

BP Discussion Points

- BP <90 34 centers
- BP <100 1 center
- Confirmatory BPs < 90 any time
  - 1 prehospital or
  - 2 consecutive ED

GCS

GCS	Centers
<8	1
<9	25
<10	2
<11	1
<12	2
<13	1
<14	1

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Deficit	GCS motor score ≤5, GCS ≤13	AVPU: responsive to pain or unresponsive	
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GSW (Do words matter?)

Neck Torso	Head Neck Torso	Head Neck Torso Groin Buttocks	Head Neck Torso Groin Buttocks
GSW/pen-1	All Pen-2 Pen-11 GSW-1 GSW/stab/pen-5	All Pen-1, Pen-4, GSW-3 GSW/stab/pen-7 GSW/Pen GSW GSW GSW Pen GSW/Pen/Stab GSW/Pen	 Pen Stab Stab Pen Pen

GSW (Do words matter?)

Pen Extremities Prox Elb/Knee	Pen Extremities Not Class I
Ext All Pen-2 Ext Pen-11 Ext GSW-2 Ext GSW/stab/pen-1 Ext GSW/stab upper ext only -1	Ext Prox elb/kn -3 Ext Distal elb/kn-6
No mention of extremities = 7 centers	

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12 Centers

Traumatic Arrest = 12 Centers

Other Class I Criteria

Airway Hanging GCS<9	Airway Inhalation	Pulse	Scene Tourniquet
9 centers	10 centers	5 centers	5 Class I 1 Class II

Other Class I Criteria

Injury w/I 24 hrs	Transfer in Unstable	Transfer in known TBI	Helicopter	RN Discr
1 center	6 centers	3 centers	1 center	1 center

Geriatric Class I Criteria

Geri Age	Geri BP	Geri HR	Geri GCS	Distinct Geriatric Section	No Geriatric Mentioned
>55 -2 >60 -1 >65 -7	<110 – 6 <100 – 1	>90 -1	<14 – 1 <12 - 2	8	23

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Anatomic Criteria

	Open Depr Skull Fx	Paralysis Ro SCI	Flail	Unstable Pelvis	>2 LB Fxs	Crush Mangle Pulseless
Class I	15	25	14	10	12	12
Class II	7	4	9	7	14	14
Not addressed	12	5	11	17	8	8

Class II MOI/injury with ↓ GCS

21 Centers

- GCS <14
- GCS <13
- GCS <12
- GCS 10-14
- GCS 9-13
- GCS 8-12
- Persistent aLOC

Is there one best way to state this?

Class II How to Capture High Risk Patient?

- Fall anticoags -3
- Any injury on anticoags – 2
- TBI in anticoagulated – 5
- TBI anticoagulated GCS 9-13
- Age>55,60,65 MOI anticoag – 5
- Age>55,60,65 Fall anticoag – 3
- Age>65 GrLevel Fall anticoag -3
- Age>65 Fall >standing
- Age>65, comorbids, anticoags, any injury – 1
- Age>65 fall, aLOC, GCS 9-14 -3
- Age>65 glfall,aLOC,<24 hr, TBI, anticoags -3
- Age>65 Fall w/I 24 hrs Ribs-1

Best way to state?

Age

Comorbids

MOI

GCS

Falls

Falls (ft)	Falls (ft)	Fall 1 Flight Stairs
20ft-1	30ft-1 20ft-19 15ft-5 12ft-1 10ft-7	6

MVC

mph	Intrusion	Eject	Death	Extricat	Rollover	Seatbelt sign
20-1 35-2 40-1 50-10 55-4 60-1 70-1	12” -9 12,18” 11 Extensive-2	32	30	15	11 Unrestrained rollover-3	7

Class II Pregnant Trauma

- Weeks Pregnant
- >19 wks 1
- >20 wks 18
- >22 wks 2
- >24 wks 1

Transfers In

Level I		Level II		Consult
Transfer In Unstable	Transfer In Known TBI	Transfers Stable	Transfer In With Known Injuries	Transfer In Not I or II
6	1	16	2	7

Discretion by Discipline

Class I	Class II	Consults
EM Physician- 34	EM Physician - 22	EM Physician – 12
ED RN- 1	ED RN - 2	ED RN - 1
	EMS - 6	

Time to Presentation

Is there a standard?

Class I	Class II	Consults
Injury within 24 hrs -1	Injury < 2 hr -2	<4 hr -1
	TBI aLOC < 72 hr -1	< 24 hr -1
	Injury < 8 hr -1	< 7 days – 3
	Injury < 12 hr -12	< 14 days -2

Trauma Consults – By Device/Test Ordered

Criteria
Anyone admitted with a C-Collar – 2
Head CT + -1
Trunk CTs Ordered – 1
Abd FAST or CT Ordered -1

Trauma Consults – By Placement Criteria

Criteria
Any trauma ED to OR – 2
Any trauma to ED Observation unit -2
Any trauma admit – 2
Any TBI admit – 2
Any OB trauma admit – 1
Any non surgeon admit - 7

Consults – Risk Criteria

Criteria
Persistent pain neck, chest, abd - 2
Multiple comorbidities - 3
Multi-Service Consults - 4

Level II Activations
Surgeon Response Expectations

Time	# Centers
On arrival	1
15 minutes	4
30 minutes	7
1 hour	2
2 hours	8
2 hours to ICU 6 hours to Floor	1 1
8 hours	1
12 hours	2

Questions?