

# Trauma Services BC Provincial Trauma Team Activation Clinical Practice Standard

## Purpose

The Provincial Trauma Team Activation standard provides the minimum requirements for Trauma Team Activation (TTA) for adult and pediatric patients with major traumatic injuries.

## Need to Know

## Background:

- The early recognition of major trauma is imperative to provide prompt and appropriate response to critically injured people in British Columbia. It has been identified consistently in the literature that the appropriate triage, trauma team response and utilization of resources within trauma systems are associated with improved rates of mortality (Petrie et al, 1996; Tignanelli et al, 2018; Georgiou et al, 2010).
- <u>The American College of Surgeons Committee on Trauma (ACS-COT) (2014)</u> states that the highest level of trauma team activation or response should occur within 15 min of the patient arriving at a lead trauma hospital (LTH).
- Trauma Team Activation criteria is required to be utilized by all emergency departments across all Tier levels (Tier 2-6) throughout British Columbia, in order to activate an organized, tier-appropriate response to the presentation of a major trauma patient.
- This standard references best practice and is supported by consensus from the Trauma Services BC (TSBC) in conjunction with all Provincial Regional Health Authorities. In addition, the standards adheres to the <u>American College of Surgeons Committee on Trauma Resources for</u> <u>Optimal Care for the Injured Patient 2014</u>, and the Trauma Team Activation.
- The forces and energy involved within the Mechanism of Injury Criteria (MOI) is used to estimate the likelihood for significant injury which requires immediate intervention. The intention is that the use of MOI in conjunction with the Physiological and / or anatomical criteria reduces the occurrence of over triage.
- The use of physiologic criteria for TTA is intended to proivde rapid identification of critcally injured and unstable trauma patients. By assessing level of conciousness (Glasgow Coma Scale [GCS]), measuring vital signs (Systolic Blood Pressure [SBP], respiratory rate [RR]) and evaluating

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the necessity for immediate airway managemet or intervention allows clinicians to have a high level of predictability of injury severity in trauma patients.

- The use of physiologic criteria for the pediatric trauma patient is intended to ensure that the rapid identification of critcally injured and unstable children occurs. Due to the unpredictable nature of children and their potential to decompensate rapidly it is critical to ensure the physicologic status of the peditaric trauma patient be a priority.
- The implemenation of anatomical criteria to the assessment of seriously injured trauma patients is essential as certain trauma patients may present with normal or stable physiological criteria or vital signs but may still have an serious antomical injury which requires further assessment and investigation.
- In the pediatric population, trauma patients may present with normal or stable vital signs but may still have an serious antomical injury which requires further assessment and investigation.
- Special considerations refers to any specific criteria whereby patients who may not meet the major MOI, physiological and or anatomical criteria but still have sustained a traumatic injury. This is specifically relevant for older adults, or patients whom maybe anticoagulated and have mulitiple co-morbitites that may put them at a greater risk of injury. The criteria identified within this catetory is the mimimun required and variability may exist within the regional health authorities.
- Similar to the adult population special considerations will be reliant upon the regional health authorities to determine. In lower tiered facilities there will be an element of over triage that occurs and the as the experience of clinicians caring for pediatric trauma patients will vary. In all circumstances it is recommended that critically injured children would be transferred to a higher level of care or to a pediatric specific lead trauma centre within their health authority where specialty services were available to provide definitive care.

## Standards

## Trauma Team Activation

The Trauma Team Activation standard provides the minimum criteria to initiate the highest level of response n for the initial management of adult and pediatric major trauma patients.

The highest level of TTA response is required to occur for any patient who meets (assumed, suspected, or confirmed) the following criteria:

• An adult that has met the major mechanism of injury criteria within the last 24 hours with one or more of the physiological and /or anatomical criteria



 A child (<16 years of age) that has met the major trauma mechanism of injury criteria within the last 24 hours or any trauma mechanism with one or more physiological and / or anatomical criteria

For patients who meet trauma the TTA criteria must have a TTA initiated within 30 minutes of the patient's arrival into the emergency department.

**Higher level of care inter-facility transfers** of major trauma patients to ED do not mandate TTA unless they meet usual screening criteria for TTA in transit or upon arrival and are within 24 hrs of injury.

The TTA criteria needs to be utilized within local processes when pre-hospital notification is received that involves an injured patient or as soon as the patient arrives within the hospital.

## Trauma Team Composition

The trauma resuscitation team composition will vary across all RHA and within all trauma centre levels. A minimum coordinated response needs to be defined and should be aligned in accordance with the Tiers of Service service delivery expectation for the site. This may include:

• An ER team or;

• A multispecialty trauma team plus or minus specialist involvement and mobilization of supporting departments and services such as transfusion, interventional radiology and surgery.

In those hospitals with limited resources the TTA response allocation may function in a variable capacity and clinicans may assume a multitude of different roles.

## **Organizational Standards**

In order to implement and sustain the trauma team activation criteria, the criteria needs to be supported through operational processes, quality improvement and training infrastructure:

- The TTA criteria is to be incorporated into local operational processes including local roles and responsibilities to ensure accountability, implementation and sustainability.
- The TTA criteria should be made visible or easily accessible in key areas of the emergency department. Depending on the trauma center level the areas could include the trauma / resuscitation room and triage area.
- The TTA criteria needs to be imbedded into local educational and communication plans that are associated with clinicians who are involved directly or indirectly in the early management of trauma care.



#### Documentation

In addition to this standard, the provincial <u>Trauma Nursing Assessment Form</u> (TNAR) or RHA equivalent should be used for CTAS level 1-3 major trauma patients. Documentation should occur in accordance with organizational and <u>BCCNM standards</u>. All physician documentation should be completed on Regional or site specific physician assessment forms.

### **Screening Tool**

• The decision and the reason(s) to activate or not to activate the trauma team needs to be documented on a standardized tool for quality assurance and quality improvement.

Until digitally incorporated into an electronic health record, a hard copy of the TTA screening tool should be readily available to all nursing and physician personnel charged with initial ED assessment of major trauma patients. The tool is to be completed and conserved in the clinical record of all CTAS 1 and 2 patients presenting following acute injury to any Tier 2-6 hospital.

#### Evaluation

TTA compliance evaluation is only meaningful if standardized clinical data are consistently collected across all trauma receiving facilities. The BC Trauma Registry is responsible for generating regular reports reflecting the overall performance of trauma team activations within BC.

TTA compliance is a widely adopted core performance indicator for trauma care quality it is one of 12 key performance metrics used by <u>Accreditation Canada's Trauma Distinction Program</u> of trauma system evaluation.

#### **Related Documents**

http://shop.healthcarebc.ca/phsa/BCWH 2/BC%20Children's%20Hospital/C-05-12-62166

http://shop.healthcarebc.ca/vch/VCHDSTs/D-00-16-30077.pdf

http://medicalstaff.fraserhealth.ca/getattachment/b64ea420-9dfa-4e0d-b85f-f21c4a8c8e75/Trauma-Activations-and-Consults-May-2016.pdf.aspx/

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## Definitions

## **TTA Criteria Met**

Trauma team activation criteria is met when the requirements are assumed, suspected, or confirmed at any point while the patient is in the emergency department, regardless of later diagnostics or availability of details that prove otherwise.

Mechanism	Definition					
Fall ≥ 6m (20ft)	Includes a confirmed fall ≥ 6m in distance. One story is equal to 3 metres. Activation will be upon physician discretion if the distance of a fall is not confirmed to be ≥6m. The BC Trauma Registry will not consider major mechanism criteria to be met.					
(adults)						
Fall ≥ 3m (10ft)	Includes a confirmed fall	≥ 3m in distance. One story is equal to 3 metres.				
(pediatrics)	Activation will be upon physician discretion if the distance of a fall is not confirmed to be ≥3m. The BC Trauma Registry will not consider major mechani criteria to be met.					
Motor Vehicle	Includes incidents where	the injured person is within a car, truck, SUV, van, bus,				
Collision	heavy transport truck, or	agricultural or similar vehicle. Includes vehicles where				
	expected use is on a road	way.				
	Motorcycles and motorize	ed ride-on vehicles are categorized separately.				
	Vehicle speed >65	Speed of >65 km/h applies to the speed of the injured				
	km/h	person's motor vehicle and/or other vehicle that				
		collides with the injured person's motor vehicle.				
	Vehicle intrusion	Intrusion refers to interior compartment intrusion, as				
	including roof: > 0.3	opposed to deformation which refers to exterior				
	meters on occupant	damage.				
	side or > 0.5 meters					
	any side.	Criteria is met if BCEHS has documented and/or given				
		notice of vehicle intrusion of this degree. Vehicle				
		Intrusion of this degree is defined as a Major				
		Niechanism – High Risk Automobile Crash in the BCEHS				
		2019 Pre-hospital Triage and Transport Guidelines for				
		Adult and Pediatric Major Trauma in British Columbia.				
Ejection from vehicle (partial or complete)Includes partial or complete ejection from a vehicle.						

## Major Mechanism Criteria

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Mechanism	Definition					
	Death in same	Indicates that there was a death in the same passenger				
	passenger	compartment, known upon arrival of the patient to the				
	compartment	reporting hospital.				
	Roll over	Includes a motor vehicle incident where the vehicle has overturned onto its roof (at a minimum).				
		Does not include 90° turn (tipped onto side) only.				
Motorcycle or ride- on vehicle collision	<ul> <li>Includes motorcycles and other motorized ride-on vehicles, including all-vehicles (ATV), snowmobiles, dirt bikes, golf carts, other off-road vehicles motorized scooters (e.g. Moped and higher cc), and similar.</li> </ul>					
	Vehicle speed >30 km/h	Speed of >30 km/h applies to the speed of the injured person's motorcycle or ride-on vehicle and/or other vehicle that collides with the injured persons motorcycle or ride-on vehicle.				
	Ejection/separation from vehicle >3m (10ft)	Includes ejection/separation from a motorcycle or ride-on vehicle >3m (10ft).				
Pedestrian, pedestrian conveyance or bicyclist struck/collision	<ul> <li>Includes pedestrians (on foot or using a pedestrian conveyance), a person ridin or in contact with an animal, and bicyclists using any type of bicycle.</li> <li>A pedestrian is any person who is traveling on foot or a user of a pedestrian conveyance. Pedestrian conveyances include strollers, motorized mobility scooter, wheelchair (any), skateboard, roller-skates, scooter (non-motorized), e scooter, skis, snowboards, sleds and similar conveyances.</li> </ul>					
	sled, horse drawn carriage) not included.					
	Bicycles includes electric bicycles.					
	Vehicle speed >30 km/h	Speed of >30 km/h applies to the vehicle that struck a pedestrian or bicyclist and/or the speed of the injured person's conveyance or bicycle.				
	Fixed object with significant momentum	Includes high velocity and/or high-speed impact with a fixed object, such as a tree, lamppost, car door or ground.				

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Mechanism	Definition				
		Includes being struck by a large animal with force (e.g. kicked by a horse or bull).			
		Includes impact with the ground with significant momentum. Examples of applicable scenarios are a downhill skier who fell into the snow while skiing at high speed, a horseback rider who fell while traveling at high speed, or a bicyclist who fell while turning a corner at high speed.			
	Thrown >3m (10ft)	Includes a pedestrian or cyclist who was struck by a vehicle and thrown >3m.			
		Includes person being thrown off of a large animal >3m.			
	Run over	Includes a pedestrian or bicyclist run over by a motor vehicle, motorcycle or ride-on vehicle (as defined in this guideline).			
		Includes being crushed or run-over by a large animal.			
		Excludes being run over by a manual or electric pedestrian conveyance or bicycle.			
		Excludes pediatric patients with isolated injury distal to the wrist and/or ankle with this mechanism alone (i.e. no anatomical, physiological or other major mechanism).			
Penetrating injury (i.e. firearm or	Includes firearm, stabbing intentional mechanisms.	and impalement. Includes both unintentional and			
stabbing)	Excludes swallowed foreign bodies that penetrate internal tissue (e.g. swallowed bone).				
Blasts and/or	Excludes fireworks and firecrackers.				
Significant assault	Includes assaults described as significant, major or with similar terminology.				
(adult)	Data collection note: Where an adult has anatomical and/or physiological signs and the mechanism is assault, the criteria for "significant assault" is met.				
Significant assault involving more than	Includes significant assault or child mistreatment involving more than one of the following regions:				



Mechanism	Definition			
one system	<ul> <li>Head/Neck (including face)</li> </ul>			
(pediatric)	• Chest			
	Abdomen			
	Long Bones			
Any suspected	Includes all suspected abusive or child mistreatment related head injury. Not			
abusive head	limited to confirmed brain injury.			
trauma (pediatric)				

## **Physiological Criteria**

Physiological	Definition
Respiratory distress,	Includes evidence of increased work of breathing, tachypnea, accessory
hypoxia or a need for	muscle use, hypoxia and/or cyanosis. Airway control includes bagging and
airway control/intubation	supraglottic airways (e.g. KingLT, LMA, iGel), intubation and ventilator support.
	Hypoxia is defined as an oxygen saturation <92% or where hypoxia has
	been documented. Use of a non-rebreather mask in the absence of
	evidence or documentation of hypoxia does not meet criteria.
Signs of poor perfusion (pediatrics)	Data collection note: Signs of poor perfusion include delayed capillary refill and mottled extremities. Clinical confirmation is required when these signs are present without specific documentation of poor perfusion.
Vitals	Physiological criteria is met when any vital sign is within the activation range at any point in the emergency department.
	Data collection note: A clinical review may identify where a vital sign was in activation due to a non-injury cause (e.g. due to sedation, medication or comorbid condition), at which point the criteria data can be changed.

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## **Anatomical Criteria**

Anatomical	Definition			
All penetrating injuries to	Includes penetrating injuries to the head, face, neck and torso, which			
the head, neck or torso	includes junctional regions (e.g. groin) and buttocks.			
All penetrating injuries to	Includes penetrating injuries to the extremities proximal to the			
the extremities proximal to	elbow/knee with blood loss that is described as significant, massive.			
the elbow/knee with	major, or with similar terminology.			
significant blood loss				
Major burns >20% with	Major burns >20% TBSA with any trauma caused by a major mechanism			
trauma (adult)	(as defined in this guideline).			
Major burns >20%	Major burns >20% TBSA with or without trauma.			
(pediatric)				
Open or depressed skull	Open or depressed skull fracture.			
fractures				
New paralysis or	A new paralysis or neurological deficit suspected to be due to traumatic			
neurological deficits	cord syndrome.			
Facial injuries with potential	Any facial injury where there is an anticipated need for pre-emptive			
airway compromise	airway control. Includes signs of potential obstruction/occlusion of the			
	airway and/or a need for continuous suction.			
Two or more proximal long	Includes fractures of femur and humerus only.			
bone fractures	Must involve freeture(s) of at least two concrete hones (i.e. hildtore)			
	Must involve fracture(s) of at least two separate bones (i.e. bilateral			
	femur fractures, bilateral numeral fractures, or numerus fracture with			
	remur fracture). Excludes multiple fractures of a single long bone only.			
Crushed, degloved, mangled	Pulseless dorsalis pedis alone does not indicate a pulseless extremity			
or pulseless extremities	proximal to the ankle.			
proximal to the wrist or				
ankle				
Amputation proximal to the	Partial or complete amputation proximal to the wrist or ankle.			
wrist or ankle				
Chest wall instability or	Instability or deformity of the chest wall (e.g. flail chest and/or sterna			
deformity	flail).			
Unstable pelvis	Data collection: Use of a pelvic binder in the absence of a working or			
	confirmed diagnosis does not indicate an unstable pelvic fracture			

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DOCUMENT #TSBC 100-1

Appendix A: Provincial Trauma Team Activation-Adult





DOCUMENT #TSBC 100-1

**Appendix B: Provincial Trauma Team Activation-Pediatric** 





#### Appendix C: Provincial Trauma Team Activation Screening Tool-Adult

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## PROVINCIAL TRAUMA TEAM ACTIVATION

ADULT (≥17 YEARS OF AGE)

Date	::	Time:		ETA:		Call taker:
Coming from:			Via:			
	□ Scene □ Facility:			□ EHS	□ Ground I	□ Air □ Private Vehicle
Acce	pted by:					□ EP2C
	Patient name:			PHN:		PTN #:
A	DOB:			Age:		Gender:
	Receiving Service / Dept	t.:		Chief con	nplaint:	
Т	Time of incident / onset	:				
м	Mechanism of injury / medical complaint:					
I	Injuries / medical findings / signs / symptoms:					
	Massive bleeding? □	Yes 🗆 No				
S	Signs / symptoms: HR: RR: BP	: / SpO2:	GC	S: E:	V: M:	CBGM:
	Treatment given:					
	IV fluids:					
Т	Medications given:					
	🗆 iGel 🛛 Tournique	t 🛛 Pelvic binder	D BV	M 🗆 TXA	□ Intubated	□ Blood prod:
	Other:					
Α	Allergies:					
М	Medication:					
В	Background history:					
0	Other:					
Trauma Team Activation criteria met? (See reverse) 🗆 Yes 🗆 No						
*Reminder: One activation to be called for each patient meeting criteria						
□ TTA activated □ by Charge Nurse □ by EP On call trauma surgeon called back □ Yes □ No						

Last updated April 2022







#### Appendix D: Provincial Trauma Team Activation Screening Tool-Pediatric



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#### PROVINCIAL TRAUMA TEAM ACTIVATION PEDIATRIC (≤16 YEARS OF AGE)

Date	:	Time:		ETA:		Call taker:	
Coming from:			<b>Via:</b> □ EHS	Ground I	□ Air □ Private Vehicle		
Acce	pted by:					□ EP2C	
	Patient name:			PHN:		PTN #:	
Α	DOB:			Age:		Gender:	
	Receiving Service / Dept	.:		Chief con	Chief complaint:		
Т	Time of incident / onset:						
м	Mechanism of injury / medical complaint:						
I	Injuries / medical findings / signs / symptoms:						
	Massive bleeding? □	Yes 🗆 No					
S	Signs/symptoms: HR: RR: BP	: / SpO2:	GCS:	E:	V: M:	CBGM:	
	Treatment given:						
	IV fluids:						
Т	Medications given:						
	🗆 iGel 🛛 Tournique	t 🛛 Pelvic binder	D BVM	d txa	□ Intubated	□ Blood prod:	
	Other:						
Α	Allergies:						
М	Medication:						
В	Background history:						
0	O Other:						
Trauma Team Activation criteria met? (See reverse)       Yes       No         * Reminder: One activation to be called for each patient meeting criteria							
TTA activated      by Charge Nurse      by EP     On call trauma surgeon called back      Yes      No							

Last updated April 2022







Effective Date:	01-April-2022						
First Released:	01-April-2	2022					
Last Revised:	18-March	-2022					
Last Reviewed:	01-April-2	01-April-2022					
Approved By:	Micheline Wiebe ED Trauma Services BC Dr. Michael Christian Provincial Medical Director Trauma Services BC John Marc Priest Provincial Director						
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Revision History:	Version Date Description/ Revised By Key Changes						
	1	1					

TEMPLATE LAST REVISED: 1 April 2022