

Critical haemorrhage clinical audit tool

This document is for staff who manage critically bleeding trauma patients in tertiary trauma centres and smaller secondary hospitals. It is one of four resources to support the implementation of guidelines and standardise the management of critical bleeding. The resources are available online in editable or print formats here: www.hqsc.govt.nz/our-programmes/national-trauma-network/publications-and-resources/publication/4398.

Background

The improving trauma care for critically bleeding patients project is a partnership between the National Trauma Network, the Accident Compensation Corporation (ACC) and the Health Quality & Safety Commission.

A national best-practice critical haemorrhage bundle of care (www.hqsc.govt.nz/our-programmes/national-trauma-network/publications-and-resources/publication/4177) was published in 2020 to inform change processes and adjust pathways so critically haemorrhaging trauma patients receive the best and most timely care possible within the constraints of the local context, capacity and capability. The aspirational goal of the project is to achieve zero in-hospital deaths from trauma-related critical haemorrhage and related multiple-organ failure by 2025.

This audit tool reflects the best-practice performance indicators of the project (see 'Purpose of this audit tool' on page 2 for more details). It is an education tool to:

- help providers review the care of critically haemorrhaging trauma patients
- allow staff to give feedback
- identify potential areas for improvement.

How an audit is triggered

Several events can trigger a clinical audit. These are best determined by the local team and will depend on the type of continuous improvement culture being fostered. Audits are commonly undertaken when opportunities for improved clinical care are identified following:

- a miscommunication during care
- a trauma team member or whānau member identifying a poor experience of care
- identification of inefficiencies or 'waste' of blood products
- identification of a 'near-miss'
- an adverse event being experienced by a patient or witnessed by team member, regardless of whether the event results in secondary morbidity
- the cause of death being attributed to critical traumatic haemorrhage or subsequent multi-system organ failure as a consequence of blood loss, whether these are considered preventable deaths or not.

Why an audit is helpful

It is common for a learning organisation to undertake process reviews periodically, whether triggered by an event as described above or when new staff join a team, or routine reviews of team processes (for example, annual site review). An audit allows opportunities for improvement of care to be identified and disseminated throughout the service.

Purpose of this audit tool

This tool walks you through the steps for undertaking an audit. Although we recommend collecting as much information as possible to identify any problems, potential solutions or team learning, this is up to your clinical lead to determine.

The tool reflects the quality metrics (outcome and process measures) listed by the national best-practice critical haemorrhage bundle of care. These metrics, shown in the following table, act as markers of system efficiency and reflect the ideal pathway of care for a critically haemorrhaging trauma patient from site of injury to definitive bleeding control and the delivery of key therapies. They also provide a point of reference for services to review their processes of care and identify areas for improvement through the audit process.

Outcome measures
Appropriate activation of the protocol (≥ 5 RBC units in first 24 hours, $> 40\text{ml/kg}$ per 24 hours of RBCs in paediatric patients) or before this level in patients dying due to haemorrhage within 24 hours
Number of patients who fit activation criteria but did not have the protocol activated
Process measures
TXA administered within one hour of protocol activation
RBC transfusion is initiated within 15 minutes of protocol activation
Patients achieve a temperature $\geq 36^\circ$ Celsius on termination of the protocol
Administration of 1:1 ratio of RBC to plasma prior to definitive bleeding control
Pre-hospital identification of a patient fitting activation criteria with notification to the receiving emergency department
Patients meeting activation criteria on arrival at the emergency department who have the protocol activated within 10 minutes
Documented definitive bleeding management plan
Movement of the patient from the emergency department to definitive bleeding control location within 30 minutes of arrival
Balancing measures
Blood component wastage (including plasma that is thawed but not used within the five-day limit on another patient)

When to use this audit tool

The audit tool can be applied to any trauma patient that:

- presented with signs of clinically significant ongoing haemorrhage **or**
- claims the qualifier 'blood loss > 20%' when traumatic injuries are being coded according to the Abbreviated Injury Scale (AIS).

Weight (Kg)	20% blood loss (ml)
100	1,500
75	1,125
50	750
25	375
10	150
5	75

See following page for audit tool.

NHI:		Date of admission:	
Date of audit:		Auditor:	
Reason for audit:			
Activation:	Y	N	
Did the patient have signs of clinically significant ongoing haemorrhage with cardiovascular instability?	<input type="checkbox"/>	<input type="checkbox"/>	Estimated blood loss:
Was an accelerated treatment pathway activated? (eg, Code Crimson)	<input type="checkbox"/>	<input type="checkbox"/>	Time activated:
If no , did patient meet activation criteria?	<input type="checkbox"/>	<input type="checkbox"/>	
Did activation occur prior to patient arriving in ED?	<input type="checkbox"/>	<input type="checkbox"/>	
Did all staff who were notified attend the ED?	<input type="checkbox"/>	<input type="checkbox"/>	
Activation criteria used:	Y	N	
Assessment of blood consumption (ABC) score ≥ 2	<input type="checkbox"/>	<input type="checkbox"/>	Penetrating injury (1)
			Systolic BP ≤ 90 (1)
			Pulse ≥ 120 (1)
			E-FAST scan positive (1)
			Total ABC score
Received ≥ 2 units of red blood cells in the ED as a resuscitative strategy	<input type="checkbox"/>	<input type="checkbox"/>	
Received pre-hospital blood products in a resuscitative strategy	<input type="checkbox"/>	<input type="checkbox"/>	
Other criteria:			
Treatment:			
Time first RBC unit initiated:			
Time of MTP activation:	or N/A <input type="checkbox"/>		

Total RBC/whole blood use:	Adult		Paediatric
	<input type="checkbox"/> ≥ 5 units/24 hours		<input type="checkbox"/> ≥ 40 ml/kg/24 hours
	<input type="checkbox"/> ≤ 5 units/24 hours		<input type="checkbox"/> ≤ 40 ml/kg/24 hours
	<input type="checkbox"/> N/A – died within 24 hours		
> 2 units of blood product wasted?	Y <input type="checkbox"/>	N <input type="checkbox"/>	
Time to first TXA dose:			
TXA total dose:			
Total amount of crystalloid administered:			
Definitive care:			
Time of ED arrival:			
Total ED length of stay:			
Time MTP deactivated:			
Final patient disposition:	<input type="checkbox"/> ICU <input type="checkbox"/> Inter-facility transfer <input type="checkbox"/> Death		
Other comments:			
Audit summary:			
Areas for improvement:			

Abbreviations: ABC = assessment of blood consumption; BP = blood pressure; ED = emergency department; E-FAST = extended focused assessment with sonography for trauma; ICU = intensive care unit; MTP = massive transfusion protocol; RBC = red blood cell; TXA = tranexamic acid.

Providers are free to edit and adapt this document as needed, including addition of provider logo.

If you have any suggested changes or areas for improvement you would like considered for inclusion in the national best practice critical bleeding bundle of care, please email help@majortrauma.nz.

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o Aotearoa**

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