

Australian and Aotearoa New Zealand Trauma Verification Program

Model Resource Criteria
For Trauma Services

April 2022

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Further information

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Introduction

Trauma is a leading cause of mortality and morbidity in those under the age of 45 and an increasing burden on older citizens. It is estimated that road trauma alone costs the Australian economy over \$30 billion every year. The RACS Trauma Verification Program is recognised as a leading mechanism for quality improvement and endorsement in trauma in Australia and Aotearoa New Zealand. Trauma Verification is a multi-disciplinary inter-collegiate process that covers all phases of trauma patient care from pre-hospital through to rehabilitation and identifies the strengths, weaknesses and critical deficiencies of the hospital's trauma service, allowing hospitals to achieve optimal trauma care against international standards. Trauma Verification assists hospitals to analyse their systems of care for the trauma patient and is based on the principle that all injured patients are seen by the right person, at the right place in the right time.

BACKGROUND

The Model Resource Criteria (MRC) standard was first published in 2001 and established guidelines for care of injured patients in Australia and Aotearoa New Zealand. It was based on adopted and revised criteria from the American College of Surgeons Committee on Trauma *Resources for Optimal Care of the Injured Patient* (1999), the Australian National Road Trauma Advisory Council (NRTAC) report (1993) and the Review of Trauma & Emergency Services (ROTES) report (Victoria, 1999).

The MRC were developed by the RACS Trauma Verification Committee, a subcommittee of the RACS Trauma Committee, in collaboration and consultation with a team of multi-disciplinary medical trauma experts including surgeons, emergency medicine physicians, intensivists, anaesthetists, nurses, researchers and allied health professionals. Many of these groups are represented on the Trauma Verification Subcommittee. The MRC complements other quality initiatives that support care of injured patients, including state and territory-based activities. The criteria underwent full review and revision at a RACS Trauma Verification Workshop in Melbourne in November 2019.

Partners in the trauma verification process include:

- RACS – Royal Australasian College of Surgeons
- ANZCA – Australian and New Zealand College of Anaesthetists
- CICM – College of Intensive Care Medicine of Australia and New Zealand
- ACEM – Australasian College for Emergency Medicine
- ATS – Australasian Trauma Society

PURPOSE

The MRC is used to evaluate and benchmark a hospital's trauma service against best practice care of injured patients. The MRC identifies the components of a trauma system necessary to achieve optimal trauma care to international standards. Service levels for hospitals from major trauma facilities (Level I) to facilities able to provide only basic trauma care (Level IV) are described.

SCOPE

The MRC reflects the broad range of clinical care required by multi-injured patients. It is intended for the use of the Trauma Verification review team to assess the hospital trauma service during the Trauma Verification site review. The MRC covers the care continuum from pre-hospital care through to rehabilitation, as well as other activities essential to a functional trauma system such as trauma prevention and research.

REVIEW

This document is reviewed regularly – at least every four years, or sooner if there is a significant change in best practice. Please refer to website for most recent version.

www.surgeons.org/research-audit/trauma-verification

Descriptors of Levels of Trauma Services

LEVEL I

A Level I Trauma Service will be capable of providing the full spectrum of care for the most critically injured patient, from initial reception and resuscitation through to discharge and rehabilitation. A Level I Trauma Service will have significant case volumes to sustain clinical excellence and be Consultant led 24/7 service. The Trauma Service will have direct responsibility for admitted major trauma patients.

A Level I Service will also provide a higher level of trauma related:

- Research
- Education across multiple disciplines
- Data and quality improvement activities
- Prevention and outreach programs
- Leadership role to other hospitals within a specified trauma region and contribute to the broader national trauma community

LEVEL II

A Level II service can be either metropolitan or rural based. Level II hospitals should provide comprehensive clinical care for the severely injured patient to supplement the clinical activities of Level I services in population dense areas. The clinical aspects of care for the injured patient should be identical to that of a Level I service, but not necessarily the same level of regional and academic (research and education) activities.

LEVEL III

The major role of a Level III service is the provision of high-quality care to non-major level trauma, with the capability of stabilising major trauma patients prior to higher trauma level referral and transfer. It can provide definitive care to a limited number of major trauma patients in concert with the regional Level I Trauma Service. In general terms Level III services will be able to provide prompt assessment, resuscitation, emergency surgery, and stabilisation of a small number of seriously injured patients, while arranging for their transfer to the responsible Major Trauma Service.

LEVEL IV

Level IV hospitals should be capable of providing resuscitation and early stabilisation of major trauma patients and their prompt referral and transfer to a higher trauma level hospital. They should be capable of sustaining that level of care and monitoring necessary prior to the inter-hospital transfer. A medical doctor needs to be in attendance within half an hour. Level IV services are not intended to care for major trauma patients beyond a safe period for transfer, but are essential for those occasions, whereby individual patients, may self-present, with major trauma, or in rural situations whereby they are the closest and most appropriate hospital. They should be supported by regional specific guidelines for this level of management and the transfer process.

1 Trauma Service Overview

ITEM	I	II	III	IV	ITEM SPECIFICS
Designation of the trauma service	E	E	E		Clarify level of government designation from Trauma Director and/or medical administration
Trauma model of care involving multiple disciplines and continuum of care	E	E	E	E	Document/evidence in hospital – needs to cover all relevant areas Specify level of involvement of surgery, emergency medicine, anaesthesiology and intensive care
Identifiable trauma service or designated admitting service	E	E	D		Formal process for consultation and clinical input for all trauma-related admissions
Organisation chart	E	E	E	E	View organisation chart to determine structure of trauma service and governance Reporting lines for regional trauma and support
Hospital trauma committee	E	E	E		Representation from all specialties involved Quarterly meetings for at least 12 months prior to visit Evidence – minutes/action items /outcomes /summary of activities
Hospital Trauma Committee Terms of reference <u>(Appendix 1)</u>	E	E	E		Clear communication channels to hospital management and/or state or regional health departments Executive represented at meetings and receive minutes
Area/Regional Trauma Committee <u>(Appendix 2)</u>	E	E	D		Meeting dates and minutes Appropriate representation from all hospitals within the area, including pre-hospital Agenda items include reporting of and attending to area/regional trauma education, audit of deaths at each hospital, trauma inter-hospital transfers, trauma bypass, feedback and data collection and reporting
Provision of a trauma clinical advisory service for all facilities within trauma referral network	E	E	D		Demonstrate support of regional trauma services and non-trauma services within the trauma referral network

2 Trauma Service Staffing

ITEM	I	II	III	IV	ITEM SPECIFICS
Medical Director of Trauma Service	E F/T	E F/T	E P/T		Role description for Trauma Director position* Appropriate FTE Consistency of the role for 12 months prior to site visit Funding for 5 years
Deputy Trauma Director	E	D	D		Roles and responsibilities job description Appropriate FTE Consistency of the role for 12 months prior
Trauma Coordinator/ Program Manager	E F/T	E F/T	E P/T		Roles and responsibilities job description* Appropriate FTE Consistency of the role for 12 months prior Funding for 5 years
Trauma Clinical Nurse Specialist / Case Manager	E F/T	D	D		Roles and responsibilities job description* FTE to cover 7 days a week
Trauma Fellow	E F/T	D			Roles and responsibilities job description* Appropriate FTE
Trauma Registrar	E F/T	D			24h availability of trauma registrar/resident Receives trauma page Appropriate FTE
Trauma Data Manager /Coordinator and data entry staff	E F/T	E F/T	D P/T	D	Roles and responsibilities job description* Appropriate FTE for trauma volume Abbreviated Injury Scale (AIS) trained
Trauma service clerical staffing	E	E	E		Roles and responsibilities job description
Trauma service office space and facilities	E	E	E		Meets OHS minimum requirements Access to required clinical information systems
Trauma Consultants	E	D			Minimum of 2 consultant surgeons for Level I
Area/Regional Trauma Coordinator	E	D			Roles and responsibilities, job description*
Research Coordinator	E	D			Roles and responsibilities, job description

*Refer to [NSW Institute of Trauma and Injury Management](#) for guide

3 Data Registry

ITEM	I	II	III	IV	ITEM SPECIFICS
Trauma Database	E	E	E	E	<p>May be a regional database</p> <p>Level I and II centres must collect ATR data set and RACS performance indicators:</p> <ul style="list-style-type: none"> • In-hospital mortality • Pre-hospital transport time • Discharge destination • Time to CT scan if GCS<13 • Trauma team activation rate for pts with ISS>12 • Screen for blood alcohol within 6h • Time in 1st facility if transferred • Time in ED
Demonstrate the process for data collection and QA, including the identification of trauma patients from the hospital systems in place	E	E	E	D	<p>Demonstrate on day of visit</p> <p>Timely entry of data</p> <p>Linked to patient outcomes</p> <p>Registry QA to ensure:</p> <ul style="list-style-type: none"> • Completeness • Accuracy • Interrater reliability
Recode and compare results with those from: - 2 patients ISS >12 who died (1 head injury; 1 other trauma) - 2 patients ISS >12 who were admitted to ICU (1 head injury; 1 other trauma) - 2 patients ISS >12 who survived to hospital discharge without admission to ICU	E	E	E	D	<p>Demonstrate on day of visit</p> <p>Integration of database into QI Program</p> <p>Flexible reporting capability (ad hoc reports)</p>
Collection of non-major trauma data		D	D		Collection of data on non-major trauma is ideal

4 Quality Improvement

ITEM	I	II	III	IV	ITEM SPECIFICS
Continuous quality improvement program with evidence of trauma quality cycle loop closure	E	E	D		<p>Compliance with national healthcare quality guidelines https://www.safetyandquality.gov.au/standards/nsqhs-standards www.hqsc.govt.nz</p> <p>Registry and performance indicators are used for process improvement</p>
Regular multidisciplinary trauma morbidity and mortality case review meetings	E	E	D		<p>Template for reviews</p> <p>Process includes causal factors</p> <p>Error reporting and escalation</p> <p>Processes for loop closure</p>
Record of attendance by trauma panel at QA sessions	E	E	D		Review minutes and attendance records
Reporting of Trauma Outcomes	E	E	E	E	Regular report to designating authority of major trauma case load, type, severity, mortality & morbidity (as described in QI program above)
Report Trauma Performance Indicators	E	E			Report on performance indicators to designating authority – pre-hospital transport time, time to CT, trauma team activation, blood alcohol collection, time in first facility and time in ED
Benchmarking	E	E	D		<p>Ascertain regular contribution of standard trauma outcomes data (as required by designating authority) that enables comparison with other services</p> <p>Contribute to Australia and New Zealand Trauma Registry quarterly</p>
Better practice guidelines: with the focus on improved outcomes & performance enhancement specific to this institution	E	E	D		Ascertain & review
Policy & procedure Manual	E	E	D	D	Policies, pathways and guidelines readily accessible to all and periodically reviewed
Trauma service staff contribute to regional or national trauma policy initiatives	E	D	D	D	Membership of major regional or national trauma organisations and/or committees
Trauma service staff participate as reviewers in a Trauma Verification Program visit to another hospital	E	D	D		RACS Trauma Verification Project Officer to confirm participation in program

Support and leadership for quality improvement within the trauma referral network	E E	Demonstrate support of regional trauma services and non-trauma services within the trauma referral network
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5 Education Programs

ITEM	I	II	III	IV	ITEM SPECIFICS
Education for surgeons involved in trauma reception	E	E	E	E	<p>All surgeons on trauma-receiving call must have DSTC and EMST training</p> <p>DSTC and EMST completed in last 5 years unless continuous participation in trauma call roster for this period</p> <p>Include further studies, e.g. masters</p>
Education for medical staff involved in trauma care	E	E	E	E	<p>EMST or equivalent for all medical staff participating in trauma call – emergency physicians, anaesthetists, intensivists</p> <p>Include further studies e.g. masters.</p> <p>Some training to be delivered to the trauma team as a group</p> <p>Consider simulation methodologies</p>
Education for Trauma Program Manager/Trauma Coordinator	E	E	D		<p>All Trauma Program Managers must have TNCC or CENA TNP (or equivalent) plus TOPIC and AIS training</p> <p>Post graduate qualifications, e.g. masters desirable</p>
Education for nurses involved in trauma care	E	E	E	E	All trauma receiving nurses should have TNCC or CENA TNP training
Education for allied health professionals involved in trauma care	E	E	D	D	Trauma training program for all allied health staff participating in trauma care
Trauma conference attendance	E	E	E	D	Trauma Director and Program Manager supported to attend national and international trauma conferences (Level I and II) or regional and national conferences (III and IV)
Education by trauma service – contribute to teaching and curriculum for medical and nursing students	E	E	E	D	<p>Level I contributes to curriculum</p> <p>Levels II to IV contribute to teaching only</p>
Trauma service accommodates junior medical staff and structured clinical rotations	E	E	D	D	Evidence of junior staffing structure
Outreach education sessions to referring or network hospitals by trauma service	E	E	D	D	<p>Offer outreach education sessions to referring or network hospitals</p> <p>Telehealth facilities available</p> <p>On-line educational content</p>
Orientation for new staff managing trauma	E	E	E	E	Ascertain orientation program for incoming permanent and regularly rotating staff (e.g. junior doctors, registrars and nurses rostered to trauma unit)
Support and leadership for education and	E	E	D		Demonstrate support of regional trauma services and non-trauma services within the trauma referral

6 Research

ITEM	I	II	III	IV	ITEM SPECIFICS
10 trauma-related, peer-reviewed articles in PubMed-listed journals in a 3-year period	E	D			Articles should be in a range of disciplines For a paediatric trauma centre, articles must be related to the care of injured children Ideally include both primary evidence and review publications
Support and leadership for research within the trauma referral network	E	D			Demonstrate support of regional trauma services and non-trauma services within the trauma referral network
Plus demonstration of trauma-related scholarly activity in at least 4 of the following 5 areas within the last 3 years:					
Trauma staff have academic affiliations with a tertiary institution	E	D			Name of the institution and staff affiliated
Trauma service facilitates and supervises research	E	D			Research undertaken by higher degree students Students should be representative of a breadth of areas, e.g. medicine, nursing, allied health, laboratory
Contribution to national and/or international multicentre research	E	D			Within the last three years
Regular presentations of original trauma research at conferences	E	D			Trauma leaders
Demonstrated peer-reviewed funding for trauma research	E	D			Successful grant applications

7 Community Engagement and Injury Prevention

ITEM	I	II	III	IV	ITEM SPECIFICS
Community education	E	E(R)	D	D(M)	Ascertain evidence of contribution/linkages to state/regional education programs For level II, essential for rural and desirable for metro services
Partnerships with safety groups in the community – e.g. police, fire, government	E	E	E	E	Attendance at relevant meetings and trauma-related initiatives
Use trauma registry data to identify injury prevention priorities and/or emerging trends	E	D	D		Provide trauma registry data (in house or by external agencies) to aid the identification of injury prevention priorities or emerging trends and the dissemination of this information with public health authorities, academia, not for profit organisations and/or injury prevention coalitions (e.g. AIPN)
Participate in primary injury prevention advocacy efforts in identified priorities	E				Participate in primary injury prevention advocacy efforts (such as through government submissions, participation in injury prevention committees or through the media)
Contribute to the development of and/or participate in injury prevention research and/or programs	E				Ascertain evidence of contribution to the injury prevention initiatives in partnership with public health authorities, academia, not-for-profit organisations and/or injury prevention coalitions (e.g. AIPN)

8 Pre-hospital and Retrieval Service Delivery

ITEM	I	II	III	IV	ITEM SPECIFICS
Triage protocols	E	E	E	E	<p>1. Monitor triage of patients & provide feedback</p> <p>2. Trauma service involvement in developing regional triage guidelines in collaboration with pre-hospital provider.</p>
Communication with medical officers	E	E	E	D	Direct communication between hospital medical & treating ambulance officer must be both possible & regularly used to pre-notify details of all seriously injured patients
Consultation, escalation and transfer in accordance with local guidelines	E	E	E	E	<p>Demonstrate support of regional trauma services and non-trauma services within the trauma referral network</p> <p>Evidence of compliance with local transfer policies including specialty network transfers e.g. spinal, burns and brain injury</p>
Helipad with day and night access	E	E	D(M) E(R)		<p>Level I must have helipad on site</p> <p>Level II must have access to a helipad</p> <p>Rural should have helipad or documented agreement for fixed wing transport to major trauma service</p> <p>Level III helipad desirable for metropolitan service, essential for rural service</p> <p>Operating procedure manual and safety and security procedures in place</p>
Medical Retrieval Capacity	E	E	E	E	<p>Current ANZCA, ACEM & CICM <u>Guidelines for transport of critically ill patients</u>. Linked into minimum standards for retrieval services</p> <p>Alternatively, if medical retrieval is by external providers, then demonstrate a link with relevant retrieval services</p>
Feedback provided to pre-hospital service	E	E	D	D	Process for provision of feedback to pre-hospital service and referring hospital
Pre-hospital involvement in trauma quality improvement	E	E	D	D	Ambulance attendance at Trauma Committee and M & M meetings

9 Emergency Department

ITEM	I	II	III	IV	ITEM SPECIFICS
Accreditation criteria specified by ACEM	E	E	E		<p>As assessed by ACEM accreditation process</p> <p>Current ACEM <u>Statement of responsibility of care in emergency department</u></p> <p>Current <u>Emergency department design guidelines</u></p> <p>Current <u>Guidelines on responsibility for care in emergency departments</u></p>
Hospital security	E	E	D		Measures in place to prevent inundation by large crowds and media
Chemical, biological, radiological decontamination facilities and procedure	E	E	D		Review facilities, procedure and plans and ascertain previous exercises (type & frequency)
Field medical team kit	E(R) D(M)	E(R) D(M)	D	D	<p>E rural, D metro for Level I and II</p> <p>Consistent with local mass casualty and emergency response plan</p>
Documented policies & guidelines for the arrival and assessment of the trauma patient	E	E	E	E	Documented triage guidelines for activation of trauma call-out and protocol for response
24-hour capacity for trauma reception	E	E	E	E	Ascertain including 24-hour medical staff
Trauma team personnel	E	E	D	D	<p>Attendance from ED, surgery, anaesthetic or ICU registrar or intensivist, radiology, nursing, pathology and allied health</p> <p>Notification to operating theatre supervisor</p>
					Initiate trauma team test callout and evaluate response time, team composition, understanding of roles and responsibilities and lines of communication
Single point primary communication referrals	E	E	D		<p>Dedicated phone line for prehospital services and local hospital EDs that has priority access to senior medical staff and is documented</p> <p>Responsibility of receiving hospital to make internal arrangements for acceptance (ICU beds etc.)</p>
Trauma consultant available for primary trauma acceptance service and ED consultation	E	E	D		<p>Consultant expected to be available via telephone for receipt of injured patients transferred between hospitals</p> <p>Consultant aware of all trauma transfers</p> <p>Or consistent with local trauma transfer protocols</p>
Ambulance access	E	E	E	E	Review access including single party major trauma
Helicopter access	E	D	D	D	Direct access from helipad to ED available 24/7
Triage on arrival	E	E	E	E	Consistent with <u>ACEM Guidelines</u> on the implementation of the Australasian Triage Scale in emergency departments

ITEM	I	II	III	IV	ITEM SPECIFICS
Designated appropriately qualified ED medical director	E	E	D		Review
Consultant in department 24hrs	D	D			Review process
Consultant on call after hours	E	E	E	D	On call set up to enable attendance within 30 minutes
All trauma received through ED	E	E	E	D	Review process
Assessment of suspected victims of sexual assault	E	E	D		Forensic examination rooms and procedures in line with ACEM accreditation requirements
Senior doctor accompanies transport from ED to Radiology/OT/ ICU	E	E	E	D	Adherence to <u>Guidelines for transport of critically ill patients</u>
Ability to perform Extended Focused Abdominal Sonogram for Trauma [eFAST]	E	E	E	D	Ascertain available as part of the trauma team Current ACEM policy document – <u>Use of focused ultrasound in emergency medicine</u>
					Credentialling process for point of care ultrasound use in trauma
All essential equipment for patient monitoring	E	E	E	E	Paediatric & ANZCA/ACEM guidelines compatible ANZCA <u>Guidelines on sedation and/or analgesia</u> Current <u>Statement on clinical principles for procedural sedation</u> Current <u>Minimum standards for intrahospital transport of critically ill patients</u>
Portable mechanical ventilator in ED resuscitation for each major trauma cubicle	E	E	E	E	Ascertain
Protective clothing	E	E	E	E	Protective clothing available that is appropriate to anticipated clinical circumstances
Protocol for access or retrieval of urgent blood	E	E	D	D	Ascertain
Digital communication capacity	E	E	E	E	Email, capture transmit still digital images Telehealth video links
Laboratory service	E	E	E	D	Procedure for urgent blood test dispatch & result availability
Emergency department thoracotomy tray	E	E	D	D	Ascertain availability of EDT tray
Equipment for arterial tourniquet	E	E	E	E	Ascertain availability of tourniquet
Equipment for difficult airway	E	E	E	E	Ascertain availability of equipment

ITEM	I	II	III	IV	ITEM SPECIFICS
Access to advanced analgesic options	E	E	D	D	Access to patient-controlled analgesia and regional pain blocks
Paediatric airway equipment	E	E			Availability of paediatric resuscitation equipment

10 Imaging Services

ITEM	I	II	III	IV	ITEM SPECIFICS
Geographically close to acute care areas	E	E	D		Assess availability of equipment 24/7
Plain X-ray service	E	E	E	D	Radiographer on site 24/7 For rural, and/or in absence of radiographer, ascertain medical officer training & accreditation for performing X-rays 24/7
CT scanning and reporting	E	E	E		Consultant radiologists available 24/7 for reporting, review of images and advice (onsite or remote) Provisional reports available within 60 minutes Confirmed reports by consultant radiologist should be available within 12 hours
PACS system	E	E	D	D	Access to images outside of radiology department
Echocardiography	E	E			2D or transoesophageal available within 1 hour of request
Angiography (digital) in operating theatre	E	E	E		Access to equipment (Image Intensifier) Availability of licensed staff to operate equipment during and after hours
Nuclear scanning	E	D			Access to nuclear medicine services to ascertain brain death
Interventional radiology	E	E			With capacity for large vessel stenting & angiographic embolization. Within 30 minutes for time-critical patients 24/7
MRI services	E	D			With capacity for MRI compatible mechanical ventilation & monitoring MRI services available 24/7 Provisional review and report from a consultant radiologist should be available within 2 hours (on site or remotely) with final report to follow within 12 hours
Teleradiology	E	D	D		Ascertain
Radiographer part of Trauma Team	E	E	E		Confirm radiology has resuscitation facilities & CPR protocols
Radiology Registrar/Consultant reporting of all trauma general radiology	E	E	E		Ascertain confirmed reports available within 12 hours
Protocol for radiology response in disaster management	E	E	D		Radiology section in the organisational document for disaster management protocol

11 Surgical Specialties

11.1 General Surgery

ITEM	I	II	III	IV	ITEM SPECIFICS
General Surgery	E	E	E		24/7 availability of consultant within 30minutes
General Surgery	E	E	E		Registrar/Consultant is part of trauma team response

11.2 Orthopaedic Surgery

ITEM	I	II	III	IV	ITEM SPECIFICS
Orthopaedic Surgery	E	E	E	D	Consultation within 30 minutes of primary assessment

11.3 Neurosurgery

ITEM	I	II	III	IV	ITEM SPECIFICS
Neurosurgery	E	E	D		Registrar/consultant (capable of emergency craniotomy) < 30minutes
Acute spinal service	E	E			Consultation with acute surgical spinal injury service available within 30 minutes

11.4 Other Surgical Specialties

ITEM	I	II	III	IV	ITEM SPECIFICS
Vascular	E	E			Consultant available on call 24/7 and on-site response within 30 minutes
		E	E		24/7 access to immediate off-site specialist advice
Plastic	E	E			Consultant available on call 24/7 and for prompt response
		E	E		24/7 access to immediate off-site specialist advice
Cardiothoracic	E	E			Consultant available on call 24/7 and for response within 30 minutes
		E	E		24/7 access to immediate off-site specialist advice
Ophthalmic	E	E			Consultant available on call 24/7 and for prompt response
		E	E		24/7 access to immediate off-site specialist advice
ENT	E	E			Consultant available on call 24/7 and for prompt response
		E	E		24/7 access to immediate off-site specialist advice
Maxillofacial	E	E			Consultant available on call 24/7 and for prompt response
		E	E		24/7 access to immediate off-site specialist advice
Urology	E	E			Consultant available on call 24/7 and for prompt response
		E	E		24/7 access to immediate off-site specialist advice
Burns	E	E	E	E	Protocol for immediate treatment and/or referral
All	E	E	E	E	Clear transfer and notification guidelines for off-site services

11.5 Paediatrics

ITEM	I	II	III	IV	ITEM SPECIFICS
Paediatrics – adult trauma service only	E	E	E	E	Guidelines for consultation with & transfer to specialist paediatric centre
Paediatrics – facility for both	E	E			24 hr on-site registrar & surgeon for paediatric trauma available within 30 minutes
Paediatrics – facility for both	E	E			Support for paediatric trauma within the trauma referral network: Consultation and advice, escalation and transfer, education and training
Paediatric trauma centre	E	E	D		As per paediatric Trauma Verification Model Resource Criteria

11.6 Obstetrics

ITEM	I	II	III	IV	ITEM SPECIFICS
Trauma service with obstetrics	E	D	D		24 hr on call on-site registrar & consultant for obstetric trauma available within 30minutes
Trauma service without obstetrics	E	E	E	E	Guidelines for consultation and transfer
Delivery bundle	E	E	D	D	Delivery bundle in ED and pathway to rapid access to OT
CTG monitoring	E	D	D		CTG monitoring immediately available

12 Anaesthetics/Pain Medicine

ITEM	I	II	III	IV	ITEM SPECIFICS
Accreditation criteria as specified by ANZCA	E	E	E		Current ANZCA <u>Recommendations on minimum facilities for safe anaesthesia practice</u> As assessed by ANZCA accreditation process
Staffing of Department of Anaesthesia	E	E	E		According to current ANZCA <u>Statement on staffing of accredited departments of anaesthesia</u> Sufficient to effectively support the trauma service
Pre-anaesthesia consultation	E	E	E		According to current ANZCA <u>Guidelines on pre-anaesthesia consultation and patient preparation</u>
Registrar on site 24 hr	E	E	D		Anaesthetic capability according to current ANZCA <u>Recommendations on minimum facilities for safe anaesthesia practice</u>
Consultant available within 30 mins	E	E	D		Ability to triage surgical cases
Patient monitoring facilities	E	E	E		According to current ANZCA <u>Guidelines on sedation and/or analgesia and current Guidelines on monitoring during anaesthesia</u>
Comprehensive Acute Pain Service	E	E	D		According to current ANZCA <u>Guidelines on acute pain management</u>
Duty anaesthetist for triage of surgical cases	E	E	E	D	Duty anaesthetist receives trauma call and communicates with trauma team leader in resuscitation bay for prompt anaesthesiology support as required
Fasting protocol	E	E	D	D	Evidence of process to manage extended preoperative fasting

13 Operating Theatre

ITEM	I	II	III	IV	ITEM SPECIFICS
Staffed 24 hours	E	E	D		Ascertain
Emergency operating theatre availability	E	E	D		Code crimson immediate transfer to theatre: Level 1 less than 15 min Level 2 less than 30 min
Trauma theatre capacity		E	E	D	KPI for unplanned return to operating theatre Mechanism for sufficient access for non-life saving but urgent trauma surgery Appropriate time to non-time critical trauma surgery Planned regular and adequate access for relook laparotomy, VATS and rib fixation, surgical tracheostomy, urgent orthopaedic, hand, plastic and spine surgery
Hybrid theatre		D			Availability of hybrid theatre ideal

13.1 Recovery Room

Recovery room capability	E	E	D	According to current ANZCA <u>Statement on the post-anaesthesia care unit</u>
Monitoring of patient flow	E	E	E	Evidence of monitoring and loop closure

14 Intensive Care Unit/ High Dependency Unit

ITEM	I	II	III	IV	ITEM SPECIFICS
Staffed & equipped in accordance with CICM Minimum standards for intensive care units	E	E	D		<p>Current CICM <u>Minimum standards for intensive care units</u></p> <p>Ascertain ICU level based on prior CICM accreditation</p> <p>Level 3 CICM essential for Trauma Verification Level I & II</p> <p>Level 2 CICM essential for Trauma Verification Level III</p>
ICU/Anaesthesia Registrar part of trauma team response	E	E	D		Ascertain
ICU/Anaesthesia Registrar accompanies transport from ICU to radiology/OR	E	E	D		Ascertain
Isolation rooms/environmental controlled rooms	E	E	D		Ascertain
Tracheostomy and ICU discharge/ outreach service	E	E	D		Ascertain
Organ donation program	E	E			<p>Referrals to regional organ procurement organisation in accordance with <u>Best practice guideline for offering organ and tissue donation in Australia</u></p>

15 Inpatient Trauma Unit/ Ward

ITEM	I	II	III	IV	ITEM SPECIFICS
Designated trauma ward	E	E			Trauma patients co-located
Consistent admitting practice for all seriously injured patients	E	E	D		Trauma service or other identifiable service in collaboration with the trauma service as the primary admitting service If consultative service require documentation
					Multidisciplinary management and discharge planning
Trauma service coordinates the care of patients with 'complex' undifferentiated injuries	E	E	D		Coordinate clinical care of complex trauma cases Supports and contributes to data collection for all trauma patients
Tertiary surveys performed by admitting unit	E	E	E		Medical records must document tertiary surveys completed within 72 hours of admission for patients triggering a trauma call
Defined policy and practices of handover to and from the trauma service	E	E	E		Mechanism for specialist teams to refer back to trauma service in case of new problems occurring Documentation/evidence of adherence to national safety standards (e.g. <u>NSQHS</u>)
Multi-disciplinary trauma rounds	E	E	D		Consultant level ward rounds Multidisciplinary discharge planning Input from all disciplines
Nursing staff with in-service training specific for injured patients	E	E	D		Ascertain regular training
24 hour ward surgical & medical staffing cover	E	E	E		Ascertain Minimum registrar level 24 hours
Rapid response system for ward emergencies	E	E	E		Evidence of adherence to medical emergency call criteria
Trauma-specific equipment	E	E	D		Trauma-specific equipment for care of the injured patient e.g. bariatric equipment and weight-checked lifting and transport devices

16 Allied Health

ITEM	I	II	III	IV	ITEM SPECIFICS
Dedicated multi-disciplinary allied health service	E	E	D	D	Ideally with specialist trauma senior in high volume disciplines (physiotherapy, social work, nutrition, psychology)
Sufficient FTE to cover trauma volume including weekends and public holidays:	E	E	D	D	<p>Rate of referrals accepted within 24-hour time frame</p> <p>Daily interventions for high risk patients</p> <p>Limited interruptions for weekends, public holidays, discharges</p> <ul style="list-style-type: none"> • Physiotherapy • Occupational therapy • Social work/counselling • Speech pathology • Nutritional support • Orthotics • Clinical psychology • Neuropsychology • Pharmacy
Social work/counselling	E	E	D		Family social work/family support available 24/7
Allied health participation in patient-based trauma team activities	E	E	D	D	<p>E.g. evidence of participation in:</p> <ul style="list-style-type: none"> • Clinical handover • Ward rounds • Audits • Multidisciplinary trauma meetings
Referral process to allow contact with allied health and provisional discharge plan within 48 – 96 hours	E	E	D	D	Review process
Evidence of trauma specific data collection	E	E	D	D	<p>Related to:</p> <ol style="list-style-type: none"> 1. process – delays in access and service gaps 2. outcome – adverse events <p>Used for audit & QI</p>

17 Rehabilitation and Recovery

ITEM	I	II	III	IV	ITEM SPECIFICS
Rehabilitation and consultation	E	D			<p>Escalation of excessive wait times</p> <p>Rehabilitation medicine consulting service review within 24 hr of referral</p> <p>Evidence of early goal-directed, within team discharge planning (including team meetings/outpatient review) and appropriate acute therapy</p>
Rehabilitation – appropriate links to external services and referral network defined	E	E	D		<p>Ascertain available within 24 hrs</p> <p>Protocols for transfer</p>
Multidisciplinary trauma clinic for outpatient follow up	E	E			<p>Use of telehealth support where appropriate</p> <p>Referral to community support</p> <p>Invite patient and family feedback to improve system</p>
In-house rehabilitation facility	D	D			Led by rehabilitation physician
Rehab medical physician involvement in trauma patient activities	D				Evidence including minutes, Terms of Reference etc
Support for repatriation and regional rehabilitation	D	D			Processes in place

18 Disaster Planning

ITEM	I	II	III	IV	ITEM SPECIFICS
Up to date disaster manual for in- & out-of-hospital disasters	E	E	E		Reviewed within last 3 years Clear roles communicated
Demonstrable linkages with regional planning processes	E	E	E		Alignment of local, district, regional and national plans
Regular tests of the components of disaster planning – including multidisciplinary involvement	E	E	E		Currency of training – exercises at least every 3 years Loop closure routinely applied to issues identified in testing and training Feedback to service level
Director of Trauma sits on Disaster Management Committee and is involved in mass casualty response	E	D			Ideally also the Trauma Program Manager/Coordinator

19 Blood Bank/ Pathology

ITEM	I	II	III	IV	ITEM SPECIFICS
Blood delivery	E	E	D		O negative immediate access Group specific 20mins X match 40mins Platelets 30mins FFP 30mins Blood bank facility & technician on site 24 hours or arrangement for delivery
Blood typing & cross matching	E	E	D		As above
ABGs – stat 24 hrs	E	E	E	D	Point of care including appropriate equipment in resuscitation area for stat results
Electrolytes – stat 24 hrs	E	E	E	D	Point of care including appropriate equipment in resuscitation area for stat results
ROTEM/TEG	D	D	D	D	Point of care including appropriate equipment in resuscitation area for stat results
Coagulation studies – Within 1 hour	E	E	D		Ascertain results available
Drug & alcohol screening	E	E	E		Ascertain results available
Osmolality – within 1 hour	E	D			Ascertain results available
Microbiology (Gram stain)	E	E			Ascertain results available
Carboxyhaemoglobin	E	E	D		Ascertain results available
Pregnancy Test	E	E	E	E	Ascertain results available

20 Other Specialty Medical Groups

ITEM	I	II	III	IV	ITEM SPECIFICS
Cardiology	E	E	D		Ascertain
Echocardiography	E	E			Ascertain 2D or transoesophageal available within 1 hour of request
Respiratory	E	E	D		Ascertain
Nephrology	E	E	D		Ascertain
Neurology	E	E	D		Ascertain
Haematology	E	E	D		Ascertain
Infectious Diseases	E	E	D		Ascertain
Geriatrics	E	E	D		Ascertain
Psychiatry	E	E	D		Ascertain
Palliative Care	E	E	D		Ascertain
Addiction Medicine	E	E	D		Ascertain

21 Protocols/ Guidelines/ Procedures

ITEM	I	II	III	IV	ITEM SPECIFICS
Cervical spine clearance	E	E	E		Ascertain & review
Management of the pregnant trauma patient	E	E	E		Ascertain & review Transfer policy if needed
Traumatic cardiac arrest management	E	E	E		Ascertain & review Thoracotomy
Management of the dying trauma patient in ED	E	E	E		Ascertain & review
VTE prophylaxis in trauma	E	E	E	E	Ascertain & review
Management & transfer of burns patients	E	E	E	E	Ascertain procedure & instructions Consistent with state or regional protocols
Management & transfer of spinal cord injury patients	E	E	E	E	Ascertain procedure & instructions Links to state or regional protocols
Management & transfer of traumatic brain injured patients	E	E	E	E	Ascertain procedure & instructions
Management of transfer of major trauma patients to higher level trauma hospital	E	E	E	E	Ascertain procedure & instructions Include criteria for paediatric patients
Management of pelvic injury	E	E	E		Review guideline
Management of chest injury	E	E	E		Review guideline
Management of abdominal injury	E	E	E		Review guideline
Massive blood transfusion	E	E	E		Ascertain & review
Alcohol screening	E	E	E	D	Ascertain & review
Alcohol intervention	E	E	D	D	Ascertain & review
Bariatric trauma management	E	E			Ascertain & review

Geriatric trauma care	E	E	E	E	Include:
					<ul style="list-style-type: none"> • Trauma Team Activation • Delirium • Violence
Mangled limb management	E	E	E	E	Ascertain & review
Psychiatric risk assessment	E	E			<p>Drugs Alcohol Behaviours of concern Family violence</p>
Organ procurement	E	E	E		Ascertain and review

Appendices

Appendix 1: Hospital Trauma Committee Criteria

Suggested terms of reference:

- Multidisciplinary
- Must hold regular meetings
- Minutes recorded including action plans and closing loop
- Receive regular reports from Trauma Director and Trauma Coordinator
- Independent of but with representation of hospital management
- Clear communication channels to hospital management and/or state or regional Health Departments
- Provide feedback.

Appendix 2: Area/Regional Trauma Committee Criteria

Suggested terms of reference:

- Multidisciplinary including pre-hospital (retrieval and ambulance)
- Must hold regular meetings
- Minutes recorded including action plans and closing loop
- Receive regular reports from Trauma Directors and Trauma Coordinators from all area/regional hospitals involved in trauma care
- Independent of but with representation of Area/Regional medical management
- Clear communication channels to each hospital management and/or state or regional Health Departments
- Agenda items include reporting of and attending to area/regional trauma education, audit of deaths at each hospital, trauma inter-hospital transfers, trauma bypass, feedback and data collection and reporting.

List of shortened forms

ABG	Arterial blood gas		
ACEM	Australasian College of Emergency Medicine	NSQHS	National Safety and Quality Health Service
ACORN	Australian College of Perioperative Nurses	OHS	Occupational Health and Safety
AIPN	Australasian Injury Prevention Network	OT	Operating Theatre
AIS	Abbreviated Injury Scale	OR	Operating Room
ANZCA	Australian and New Zealand College of Anaesthetists	P/T	Part-time
ATLS	Advanced Trauma Life Support	PACS	Picture archiving and communication system
ATR	Australian and New Zealand Trauma Registry	QA	Quality Assurance
CENA TNP	College of Emergency Nursing Trauma Nursing Program	QI	Quality Improvement
CICM	College of Intensive Care Medicine of Australia and New Zealand	R	Rural
CPR	Cardiopulmonary Resuscitation	RACS	Royal Australasian College of Surgeons
CT	Computed tomography	ROTEM	Rotational Thromboelastometry
CTG	Cardiotocography	TEG	Thromboelastography
D	Desirable	TNCC	Trauma Nurse Core Course
DSTC	Definitive Surgical Trauma Care	TOPIC	Trauma Outcomes and Performance Improvement Course
E	Essential	VATS	Video-Assisted Thoracoscopic Surgery
ED	Emergency Department	VTE	Venous Thromboembolism
EDT	Emergency Department thoracotomy		
EMST	Emergency Management of Severe Trauma		
ENT	Ear, nose and throat		
F/T	Full-time		
FFP	Fresh frozen plasma		
FTE	Full-time equivalent		
GCS	Glasgow Coma Scale		
ICU	Intensive Care Unit		
ISS	Injury Severity Score		
KPI	Key performance indicator		
M	Metropolitan		
M & M	Morbidity and mortality		
MRI	Magnetic resonance imaging		