

TRAUMA ✓ VERIFICATION

BENCHMARKING TRAUMA CARE

THE AUSTRALASIAN TRAUMA VERIFICATION PROGRAM MANUAL



ROYAL AUSTRALASIAN
COLLEGE OF SURGEONS

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For copies of the documents or appendices referred to in this publication please contact:

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Trauma Verification Sub Committee Structure

The Trauma Verification Sub-Committee is a Sub-Committee of the Trauma Committee of the Royal Australasian College of Surgeons. Despite the very close links with the Royal Australasian College of Surgeons, the Verification Sub-Committee is a truly multi-disciplinary Inter-Collegiate process. The partners in the Verification process are:

1. RACS – Royal Australasian College of Surgeons
2. CICM – College of Intensive Care Medicine of Australia and New Zealand
3. ANZCA – Australian and New Zealand College of Anaesthetists
4. ACEM - Australasian College for Emergency Medicine
5. ATS - Australasian Trauma Society
6. Nursing representatives

Summary

What is Trauma Verification?

The Australasian Trauma Verification Program is a multi-disciplinary inter-collegiate process, developed through the Royal Australasian College of Surgeons to assist hospitals in analysing their system of care for the injured patient.

The review covers pre-hospital through to discharge from acute care and identifies the strengths and weaknesses of the hospital's trauma service. Trauma Verification is applicable to all levels of Trauma Services, that is both Major and non major Trauma Services.

Why do we need Verification?

- To improve trauma service delivery in Australasia
- To improve patient outcomes
- To improve trauma data and promote trauma quality and educational activities
- Literature exists regarding the benefits of Trauma Verification and impact on patient outcomes

How has the Trauma Verification Program been established?

- Seeding grant from Royal Australasian College of Surgeons (RACS)
- Multidisciplinary committee with support of relevant Colleges which includes surgeons, emergency physicians, intensivists, anaesthetists and nursing staff
- Pilot of program across a number of sites
- Expert input during pilot phase by representatives from the American College of Surgeons Trauma Verification Program
- The Australasian Trauma Verification Manual (including the pre-review questionnaire and Model Resource Criteria prepared by the multi-disciplinary Verification Working Party)
- Continual process of review based upon experience and stakeholder feedback

What has been achieved?

- Intercollegiate cooperation
- Revision of standards for trauma care in Australasia
- Verification reviews in most Australian States and Territories and New Zealand
- Verification reviews across Major Trauma Services and non Major Trauma Services
- Development of Trauma Verification expertise
- Positive feedback from hospital trauma Directors and clinicians after undergoing a review
- Coordinated whole of Trauma Region review.

Future Directions

- Refinement of standards as evidence emerges
- Ongoing multidisciplinary support
- Closer alliance with purchasers of trauma care (E.g. Departments of Health)
- Ongoing evaluation of benefits of Trauma Verification Program

The Program

Introduction

Verification of trauma services providing care to the severely injured patient is an exciting advance in trauma care in Australasia. There is evidence that trauma services in many jurisdictions in Australasia can be improved upon. The Trauma Verification Program provides the mechanism to do so.

The cooperation between the multidisciplinary teams involved in care of major trauma is a strength of the Trauma Verification program.

History

In March 2000, under the chair of Dr Jim McGrath, a multi-disciplinary group of committed clinicians was assembled to form the Trauma Verification Sub Committee. Utilising a seeding grant of \$50,000 from the Royal Australasian College of Surgeons, a pilot program of six consultation visits was conducted over 24 months in Australasia and a workshop inviting participation from Australasian Trauma Care providers. The six hospitals which undertook Trauma Verification in 2000/2001 as part of the pilot project were: Liverpool Hospital, NSW; Royal Adelaide Hospital, SA; New Children's Hospital, NSW; Westmead Hospital, NSW; The Alfred Hospital, VIC and John Hunter Hospital, NSW.

The Verification process has used Australian and international trauma clinicians. It has borrowed from the Verification experience of the American College of Surgeons Committee on Trauma (ACS CoT). In the United States, the Verification process has been active for almost 20 years and has undergone considerable evolution.

The Australasian Trauma Verification Sub Committee has been most grateful for the support from the ACS CoT who has provided much guidance. They have also allowed Trauma Verification Sub-Committee members to attend both the ACS CoT Verification Review Committee meetings and observe on Verification visits to hospitals in the United States. It is important to note the difference between the ACS CoT Verification program and the Australasian Verification program – namely the Australasian program's involvement of clinicians other than surgeons which brings a broader and more collegial emphasis to Verification.

Verification and Designation

Verification is aimed at verifying the level of care provided and not designating which institutions should manage major trauma.

Major trauma services are designated by either the regional health service or the state Departments of Health.

The Process

Type of Review:

Consultation vs. Formal Verification

Trauma Verification is developed as a way of assisting each individual institution to benchmark its trauma services. It does not seek to 'pass or fail' the trauma service. The Trauma Verification Sub Committee provides encouragement and support during the review process and, as practicing trauma clinicians, the Committee understands the demands and challenges placed on trauma services throughout Australia and New Zealand.

The objective of a Trauma Verification Consultation visit is to provide a constructive review of the trauma service and identify areas where the service would be unable to meet the criteria stipulated if undergoing Formal Verification. It can be used to help prepare the trauma service for Formal Verification. Every trauma service is recommended to undergo a Consultation Verification visit prior to the more rigorous Formal Verification visit. It has been the experience of the Trauma verification program that those Trauma Services that have undergone a Consultative review, prior to a Formal review, have been better prepared at the time of Formal Verification.

A Consultation Site Visit is a slightly less intense review and involves a two-three member multi-disciplinary.

A Formal Trauma Verification is more intense and involves a multi-disciplinary team of up to five members. On occasion there may be observers (usually provisional future reviewers) as well members who may bring unique expertise for the particular Trauma Service under review (e.g. a mixed adult-paediatric trauma service, or service that includes obstetric trauma.)

Pre-Review Questionnaire:

Each institution undergoing a Consultation or Formal Verification visit completes a pre-review questionnaire which details the strengths and weaknesses of the trauma services. The pre-review questionnaire allows the site review team to focus on those particular issues relevant to that service. A copy of the pre-review questionnaire can be accessed at the Trauma Verification website at www.surgeons.org/traumaverification

Model Resource Criteria

The Model Resource Criteria (MRC) are the criteria the review team use as one part of the evaluation of trauma services for each individual hospital. The MRC have been developed an agreed upon following multidisciplinary workshops and is a continually evolving document that aims to keep up with the current international standards..

The methodology and the criteria upon which the Trauma Verification Program is based have been developed through a multidisciplinary, cooperative approach. This process was initiated at the Trauma Verification Workshop in December 2000. The resource criteria are deemed either essential or desirable for a trauma service in Australasia.

The Model Resource Criteria are continually evolving and are based upon best available evidence, high level guidelines and consensus reached at the workshops. The criteria are reflective of the provision of major trauma care in the Australasian hospital environment.

Reference material used in developing the MRC included:

- The American College of Surgeons Verification Resources criteria (for more information see American College of Surgeons website <http://www.facs.org/trauma/verificationhosp.html>)
- The National Road Trauma Advisory Council (NRTAC) resources criteria (for more information see <http://www.surgeons.org/Content/NavigationMenu/FellowshipandStandards/FellowshipServices/Trauma/Publications/NRTACTraumaReport1993.pdf>)
- The Review of Trauma & Emergency Services Victoria 1999 - ROTES Report (see <http://www.health.vic.gov.au/trauma>)

Site Review Team

A team of five reviewers conducts the site review for a Formal Trauma Verification visit and a two-three member team is required for a Consultation visit. The team is multidisciplinary, reflecting the broad range of clinical care required by the multiply injured patient.

The team reviews the pre-review questionnaire with the key trauma service personnel on the evening prior to the visit, undertakes a detailed tour of the facility, meets key clinicians and hospital management and conducts medical record reviews to verify the quality of trauma care being provided.

Each review visit includes a dinner, during which key trauma involved hospital staff can meet and have discussions with reviewers as part of the Verification process. This also allows an opportunity for key staff, not available during the daytime site visit to also meet with the review team. The hospital site visit begins with an early morning breakfast meeting, during which night staff have an opportunity to also meet the review team.

At the immediate completion of the site review the institution receives verbal feedback from the team leader of the Verification team.

Each institution undergoing either a Formal or a Consultative Trauma Verification visit receives a comprehensive written report.

The report is submitted to the Trauma Verification Sub-Committee for final approval before being sent to the authorising body and/or the trauma director and hospital administration.

Benefits of the Trauma Verification Program

The Trauma Verification process has enabled institutions to demonstrate in a substantive way their commitment to the provision of care to the seriously injured patient. There is evidence from the United States of the benefits of Verification in reducing patient mortality and morbidity and increasing the efficiency with which hospitals deliver trauma care.

The multidisciplinary review team includes senior trauma clinicians (medical and nursing) encourages an exchange of ideas and appreciation for solutions to shared challenges.

The process of preparation for a Trauma Verification Formal or Consultation visit has been described by the individual institutions undergoing Verification as highly productive. It provides an opportunity to critically evaluate the structure, staffing and resources within each institution providing care for the major trauma patient.

The Trauma Verification process enables institutions to reflect upon identified strengths and weakness and recommendations. Using the detailed verbal and written feedback from Trauma Verification, institutions can then contemplate a way forward towards improving trauma care delivery as well as further strengthening their areas of best performance.

Evaluation and Research

Ongoing Evaluation

As part of its commitment to the enhancement and growth of the program, the Trauma Verification Sub Committee has commenced data gathering exercises. The Trauma Verification Sub Committee would encourage, assist and is prepared to participate, with hospitals undergoing Trauma Verification to undertake a methodical evaluation of the impact of Verification upon their Trauma Service. There will be confidentiality and research ethical issues that would need to be considered with any research proposals that require use of data held by the Trauma Verification Sub Committee.

Feedback

Reports from trauma service directors regarding the impact of Verification have been very positive. The following comments from trauma directors demonstrate the immediate value of a Trauma Verification or Formal Consultation visit:

- ❖ “Verification has been the single most helpful and practical exercise I have undertaken in my experience in Trauma.”
- ❖ “It is the most effective tool to improve and upgrade a trauma service – both in terms of the relatively low-cost to the hospital and as a practical guide to problem solving”

- ❖ “Thirty five weaknesses in our Major Trauma Service were identified from the Verification Report, most of which have since been corrected.
- ❖ “It highlighted to administration and the rest of the hospital the complexity of trauma management and how it requires a multidisciplinary team”
- ❖ "the best thing that has happened in trauma care"
- ❖ "it identified areas of weakness that we were unaware existed"
- ❖ "it emphasised the need for action"
- ❖ "an extremely rewarding and informative exercise"
- ❖ “Verification highlighted to hospital management the quality of work done by all those involved in the care of the multi-injured patient

Costs to undertake a Trauma Verification Review

The following fees will apply for **Australian Hospitals**:

- Trauma Verification Formal review AUD\$15,950 (incl GST)
- Trauma Verification Consultative review AUD\$13,750 (incl GST)

The following fees will apply for **New Zealand Hospitals**:

- Trauma Verification Formal review NZD\$18,675 (incl GST)
- Trauma Consultative review NZD\$16,100 (incl GST)

In addition the hospital undertaking a Trauma Verification review is responsible for accommodation, and travel expenses for the review team as well as the dinner and breakfast meeting, all of which are part of the verification process.

Hospital Trauma Verifications:

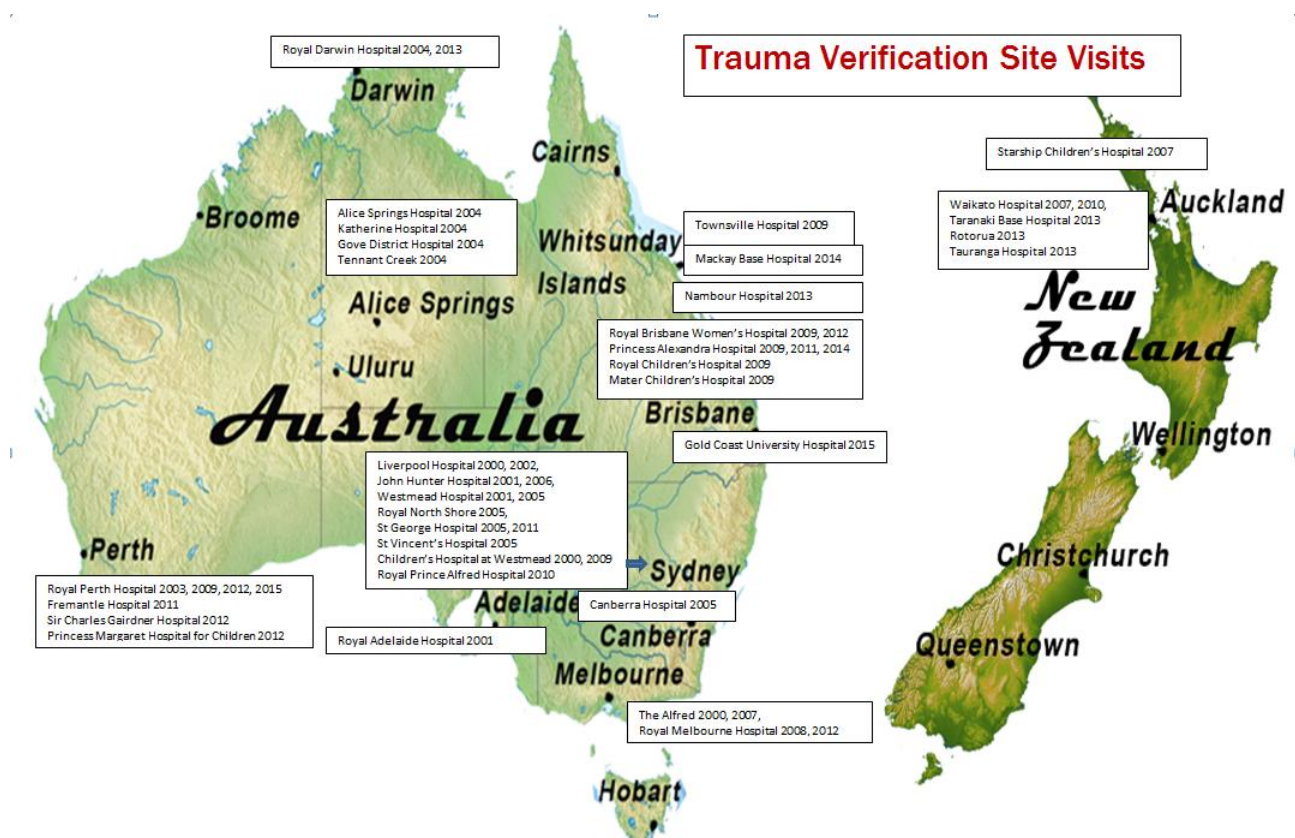
The Program has continued to expand across Australasian Hospitals, Regional Trauma Centres and Systems to include both Adult and Paediatric patients. There have been 47 Hospital Verifications undertaken to date and these include 12 Formal Verifications.

A major trauma centre has successfully undergone 3 Formals, after beginning with a Consultative. Its achievements have been acknowledge by their Government and been associated with perceived service and patient benefits, including shorter stays in hospital for the Trauma Patients.

Regional Trauma Centres, have undertaken Consultative Verifications which has assisted with funding for equipment, staffing and increased the networking / communications within the Trauma Services / Districts and the broader Trauma Community. These Trauma Services have booked Formal Verifications since.

The unique challenges of delivering high-quality trauma care in both Major and Regional Areas were acknowledged. These include population spread over the geographic areas of the Cities and Towns; the population health issues and injury in this jurisdiction to include high-speed motor vehicle crashes, isolated roads and alcohol abuse.

The commitment and enthusiasm of the clinical staff that facilitate these reviews is outstanding and the continual improvements in Trauma Services for the Trauma Patient have been acknowledged.



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, be Consultant led 24/7 service. The Trauma Service will have direct responsibility for admitted major trauma patients (bed card).

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

- Research
- Education across a number of disciplines
- Data and Quality 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 medium and minor 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 patient 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.

Legend for the Model Resource Criteria:

E – Essential

D –Desirable

Model Resource Criteria

Model Criteria	I	II	III	IV	Criteria Specifics
1. Administrative Outline					
1.1 Trauma Service Overview					
Hospital Trauma Committee	E	E	E		Meeting dates and minutes - Appendix 3
Area/Regional Trauma Committee	E	E	D		Meeting dates and minutes - Appendix 3
Designation of the trauma service	E	E	E		Clarify from Trauma Director and/or medical Administration
Organisation chart	E	E	E	E	Needs structure and view chart
Hospital Trauma committee Terms of reference	E	E	E	E	
1.2 General Information					
No criteria					
Model Criteria	I	II	III	IV	Criteria Specifics
1.3 Hospital Administration					
Safe hours	E	E	E	E	Ascertain evidence of adherence to safe hours
Trauma Admit Bed Card	E	D			
Designated trauma unit	E	D			

Model Criteria	I	II	III	IV	Criteria Specifics
2 Trauma Service Summary					
Model Criteria	I	II	III	IV	Criteria Specifics
2.1 Staffing – Roles / Responsibilities					
Medical director of trauma service	E	E	E		Need role description for Trauma Director positions Appendix 2
Deputy Trauma Director	E	D	D		Need roles and responsibilities job description
Trauma coordinator	E	E	E		As for Trauma Director - Appendix 2
Trauma Specialist Clinical Nurse/ Case Manager	E	D	D		Need roles and responsibilities job description
Trauma Fellow	E	D			Need roles and responsibilities job description
Data Manager	E	E	D		Need roles and responsibilities job description
Trauma Service Clerical staffing	E	E	E		Need roles and responsibilities job description
Trauma service office space and facilities	E	E	E		
Model Criteria	I	II	III	IV	Criteria Specifics
2.2 Data Registry					
Trauma Database	E	E	E	E	May be a regional database
Demonstrate the process for data collection in your hospital, including the identification of	E	E	E	D	Demonstrate on day of visit

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Model Criteria	I	II	III	IV	Criteria Specifics
trauma patients from the hospital systems in place					
Demonstrate QA query to find duplicate records	E	E	E	D	Demonstrate on day of visit
Demonstrate QA query to find patients with >1 record on the database (trauma recidivism)	E	E	E	D	Demonstrate on day of visit
Demonstrate the formula & queries for the auto-calculations for: GCS ISS LOS And any other auto-calculations	E	E	E	D	Demonstrate on day of visit
Recode and compare results with those from - 2 patients with ISS >15 who died (1 head injury; 1 other trauma) - 2 x patients ISS >15 who were admitted to ICU (1 head injury; 1 other trauma) - 2 x patients ISS >15 who survived to hospital discharge or go to ICU - 2 x patients ISS >41 not admitted to ICU	E	E	E	D	Demonstrate on day of visit
Model Criteria	I	II	III	IV	Criteria Specifics

Model Criteria	I	II	III	IV	Criteria Specifics
2.3 Quality Improvement					
Continuous quality improvement program with evidence of quality cycle loop closure	E	E	D		Ascertain compliance with ACHS guidelines www.achs.org.au/
Continuum of care guidelines	E	E	D		Ascertain compliance with ACHS guidelines www.achs.org.au/
Reporting of Trauma Outcomes	E	E	E	E	Ascertain Regular report to designating authority of major trauma case load, type, severity, mortality & morbidity (as described in QA program)
Peer review protection	D	D	D	D	Ascertain Documentation supporting legislative protection of the QA process
Benchmarking	E	E	D		Ascertain Regular contribution of standard trauma outcomes data (as required by designating authority) that enables comparison with other services Participate in National Trauma Registry
Record of attendance by trauma panel at QA sessions	E	E	D		Ascertain & review
Better Practice Guidelines: with the focus on improved outcomes & performance enhancement specific to this institution	E	E	D		Ascertain & review
Orientation & Education Manual	E	E	D	D	Ascertain & review
Policy & Procedure Manual	E	E	D	D	Ascertain & review

Model Criteria	I	II	III	IV	Criteria Specifics
2.4 Education Programs					
Personal education for clinicians involved in trauma care - EMST	E E	E E	E E	D D	Ascertain EMST or equivalent for all consultant medical staff & trauma team leaders
Personal education for surgeons involved in trauma care - DSTC	E	E	D		Ascertain DSTC or equivalent for all Surgeons participating in trauma call
Personal education for nurses involved in trauma care – eg TNCC	E	E	D	D	Ascertain Trauma training program for all nursing staff participating in trauma receiving
Education by trauma service – offer opportunity for EMST	E	E	D		Ascertain Offer EMST course, check records
Education by trauma service – conduct & oversee Regular in-service multidisciplinary education sessions	E	E	D		Ascertain Regular multidisciplinary education sessions occur & type
Education by trauma service – conduct & oversee Outreach education sessions to referring or network hospitals	E	E	D		Ascertain Outreach education sessions to referring or network hospitals
Education by trauma service –	E	E	E	E	Education by trauma service – conduct & oversee

Model Criteria	I	II	III	IV	Criteria Specifics
conduct & oversee Orientation program for incoming staff					Orientation program for incoming staff
Education by trauma service – conduct & oversee In-service training for ward nurses	E	E	D		Ascertain In-service training for ward nurses
Academic affiliations with a tertiary institution	E	E	D	D	Ascertain
Model Criteria	I	II	III	IV	Criteria Specifics

2.5 Research

Trauma Research	E	E			Ascertain Documented evidence of research
Model Criteria	I	II	III	IV	Criteria Specifics

2.6 Community Engagement

Community education	E	E	D		Ascertain evidence of contribution/linkages to State/Regional education programs
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3. Operational Activities

Model Criteria	I	II	III	IV	Criteria Specifics
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3.1 Pre – Hospital Service Delivery and Inter-Hospital Transport

Triage protocols	E E	E D	E	E	1. Monitor triage of patients & provide feedback. 2. Involvement in developing regional triage guidelines in collaboration with pre-hospital provider.
Communications 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
Site Medical team capacity	E	D E	D E		Composition of team task specific

Model Criteria	I	II	III	IV	Criteria Specifics
		Rural	Rural		
Helipad with day and night access	E	E	D E Rural		Rural should have helipad
Helipad security and safety procedures	E	E	E		View on day of visit
Operating procedure manual	E	E	E		Interaction with helipad / transport providers
Medical Retrieval Capacity	E	E	E	E	ANZCA, RACP Doc IC-10 Minimum standards for transport of critically ill patients. Linked into minimum standards for retrieval services. Alternatively, if medical retrieval is by external providers, then demonstrate a link with relevant retrieval services
Capability of in hospital transportation of patients according to ANZCA /ACEM criteria	E	E	E	D	Defined process and responsibility and allocated equipment
Model Criteria	I	II	III	IV	Criteria Specifics
3.2 Trauma Team					
Trauma Team	E	E	E	E	Documented criteria for activation
Trauma Team	E	E	E	E	24 hour activation
Model Criteria	I	II	III	IV	Criteria Specifics
3.3 Emergency Department					
General criteria as established by ACHS accreditation guide	E	E	E	D	As assessed by ACHS accreditation process
Accreditation criteria specified by ACEM	E	E	E		As assessed by ACEM accreditation process <i>ACEM Docs S18 Statement of responsibility of</i>

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Model Criteria	I	II	III	IV	Criteria Specifics
					<i>care in emergency department</i> ,Appendix 6 P15 <i>Emergency department design guidelines</i> , Appendix 7 PO18 <i>Guidelines on responsibility for care in emergency departments</i> , Appendix 8
Documented policies & guidelines for the arrival and assessment of the trauma patient	E	E	E	E	Ascertain guidelines including a check of the trauma team response
24 hour capacity for trauma reception	E	E	E	E	Ascertain
Direct communication with ambulance	E E	E E	E D	D D	1. Notification 2. Communication
Single point telephone referrals	E	E	D	E	Dedicated line, accessible and documentation of calls
Ambulance access	E	E	E	E	Review access
Helicopter access	E	E	E		Review access
Triage on arrival	E	E	E	E	Review procedure
Designated ED medical director	E	E	D		Ascertain
Consultant in department 24hrs	E	D			Review process
Consultant on call 24 hours	E	E	E	D	Within 30 minutes
Medical officers with training in ATLS/EMST principles	E	E	E	E	Ascertain

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Model Criteria	I	II	III	IV	Criteria Specifics
Medical officers available 24hrs	E	E	E	D	Ascertain
Nursing staff with trauma training in ATLS principles	E	E	D	D	Ascertain proportion of staff trained
Adequate hospital staffing for 24hr trauma team response	E	E	D	D	Ascertain
Trauma team activation	E	E	E	D	Initiate trauma team test callout and ascertain response, team composition, understanding of roles and responsibilities and lines of communication
Single point of entry for all trauma	E	E	E	D	Review access
Senior doctor accompanies transport from ED to Radiology/OR/ICU	E	E	E	D	Ascertain
Ability to perform Focused Abdominal Sonogram for Trauma [FAST]	E	E	D	D	Ascertain Available as part of the trauma team <i>ACEM Doc P21 Policy Document – Use of bedside ultrasound by emergency physicians</i>
ECG monitor & defibrillator & pacer	E	E	E	E	Ascertain Paediatric & ANZCA /ACEM guidelines compatible <i>ANZCA PS-9/19 Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i> <i>PS-48 Statement on clinical principles for procedural sedation</i> <i>PS-39 Minimum standards for intrahospital transport of critically ill patients</i>
Pulse oximetry	E	E	E	E	Ascertain Paediatric & ANZCA/ /ACEM guidelines

Model Criteria	I	II	III	IV	Criteria Specifics
					<p>compatible</p> <p><i>ANZCA PS-9/19 Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i></p> <p><i>PS-48 Statement on clinical principles for procedural sedation</i></p> <p><i>PS-39 Minimum standards for intrahospital transport of critically ill patients</i></p>
Capnography	E	E	E	E	<p>Ascertain Paediatric & ANZCA/ ACEM guidelines compatible</p> <p><i>ANZCA PS-9/19 Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i></p> <p><i>PS-48 Statement on clinical principles for procedural sedation</i></p> <p><i>PS-39 Minimum standards for intrahospital transport of critically ill patients</i></p>
Non-invasive BP	E	E	E	E	<p>Ascertain Paediatric & ANZCA/ ACEM guidelines compatible</p> <p><i>ANZCA PS-9/19 Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i></p> <p><i>PS-48 Statement on clinical principles for procedural sedation</i></p> <p><i>PS-39 Minimum standards for intrahospital transport of critically ill patients</i></p>
Invasive BP	E	E	D		<p>Ascertain Paediatric & ANZCA /ACEM guidelines compatible</p> <p><i>ANZCA PS-9/19 Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i></p> <p><i>PS-48 Statement on clinical principles for procedural sedation</i></p> <p><i>PS-39 Minimum standards for intrahospital transport of critically ill patients</i></p>

Model Criteria	I	II	III	IV	Criteria Specifics
Other invasive pressure monitors	E	D	D		Ascertain Paediatric & ANZCA /ACEM guidelines compatible <i>ANZCA PS-9/19 Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i> <i>PS-48 Statement on clinical principles for procedural sedation</i> <i>PS-39 Minimum standards for intrahospital transport of critically ill patients</i>
Temperature including Core	E	E	E	E	Ascertain Paediatric & ANZCA /ACEM guidelines compatible <i>ANZCA PS-9/19 Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i> <i>PS-48 Statement on clinical principles for procedural sedation Appendix 10</i> <i>PS-39 Minimum standards for intrahospital transport of critically ill patients</i>
Portable multiparameter monitor	E	E	E	E	Ascertain Paediatric & ANZCA/ACEM guidelines compatible <i>ANZCA PS-9/19 Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i> <i>PS-48 Statement on clinical principles for procedural sedation</i> <i>PS-39 Minimum standards for intrahospital transport of critically ill patients</i>
Portable mechanical ventilator in ED resuscitation for each major trauma bed space	E	E	E	E	Ascertain
Compartment pressure monitor	E	D			Ascertain
CTG or link to	E	D	D		Ascertain

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Model Criteria	I	II	III	IV	Criteria Specifics
that unit					
Chemical, biological, radiological (CBR)	E	E	D		Review procedure & plans & ascertain previous exercises (type & frequency)
CBR decontamination facilities	E	E	D		Ascertain & review procedures
Security	E	E	D		Ascertain
Protective clothing	E	E	E	E	Ascertain
Protocol for access or retrieval of urgent blood	E	E	D	D	Ascertain
Full range of splints	E	E	E	D	Ascertain
Delivery bundle	E	E	D	D	Ascertain
Mobile X-ray	E	E	E	D	Ascertain
ECG 12 lead	E	E	E	E	Ascertain
Field medical team kit	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	Ascertain procedure for urgent blood test dispatch & result availability
Emergency thoracotomy tray	E	E	D	D	Ascertain availability
Equipment for DPL cut down	E	E	D	D	Ascertain availability
Equipment for arterial tourniquet	E	E	D	D	Ascertain availability

Model Criteria	I	II	III	IV	Criteria Specifics
Equipment for surgical airway	E	E	D	D	Ascertain availability
X-Ray development facilities	E	E	D	D	Ascertain availability
3.4 Surgical Specialities					
3.4.1 Surgical Specialities – General Surgery					
Model Criteria	I	II	III	IV	Criteria Specifics
General Surgery	E	E	E		Surgical skills (capable of emergency laparotomy & thoracotomy) 24 hrs, consultant <30mins. Ideally DSTC trained.
General Surgery	E	E	E		Registrar/Consultant is part of trauma team response
3.4.2 Surgical Specialities – Orthopaedic Surgery					
Orthopaedic Surgery	E	E	D		Registrar/ consultant (capable of emergency external fixture) <30mins.
3.4.3 Surgical Specialities – Neurosurgery Surgery					
Neurosurgery	E	E			Registrar/consultant (capable of emergency craniotomy) < 30mins
3.4.4 Surgical Specialities – Other Surgical Specialities					
Vascular	E	E			Consultant available on call 24 hr and for prompt response
Plastic	E	E			Consultant available on call 24 hr and for prompt response
Cardiothoracic	E	E			Consultant available on call 24 hr and for prompt response
Ophthalmic	E	E			Consultant available on call 24 hr and for prompt response
ENT	E	E			Consultant available on call 24 hr and for prompt response
Maxillofacial	E	E			Consultant available on call 24 hr and for prompt

Model Criteria	I	II	III	IV	Criteria Specifics
					response
Urology	E	D			Consultant available on call 24 hr and for prompt response
3.4.5 Paediatrics					
Paediatrics – Paediatric Trauma Centre	E				Ascertain 24 hr on site registrar & surgeon available within 30mins
Paediatrics – Adult Trauma Centre	E	E	E	E	Ascertain Guidelines for consultation & transfer with specialist paediatric centre
Paediatrics – facility for both	E	E			Ascertain 24 hr on site registrar & surgeon for paediatric trauma available within 30mins
3.4.6 Obstetrics					
Major Trauma Centre (MTC) with obstetrics	E	D	D		Ascertain 24 hr on call on site registrar & consultant for Obstetric trauma available within 30mins
Trauma Centre without obstetrics	E	E	E	E	Ascertain Guidelines for consultation, transfer
Model Criteria	I	II	III	IV	Criteria Specifics
3.5 Anaesthetics/Pain Medicine					
Staffing of Department of Anaesthesia	E	E	E		According to ANZCA guidelines PS42 <i>Recommendations for staffing of departments of anaesthesia</i> , Appendix 11. Sufficient to effectively support the trauma service.
Pre-anaesthesia consultation	E	E	E		According to ANZCA Doc PS7 <i>Recommendations on the pre-anaesthesia consultation</i> , Appendix 12
Anaesthetic capability	E	E	E		According to ANZCA Docs T1: <i>Recommendations on minimum facilities for safe anaesthesia practice in operating suites</i> & T2: <i>Recommendations on minimum facilities for safe anaesthesia practice outside operating suites</i> - Appendix 13 & 14 Ascertain 24 hr on site registrar & consultant available within 30mins

Model Criteria	I	II	III	IV	Criteria Specifics
Patient monitoring facilities	E	E	E		According to ANZCA doc PS 9/19 <i>Guidelines on conscious sedation for diagnostic interventional medical and surgical procedures</i> , Appendix 9 PS-18, <i>Recommendations on monitoring during anaesthesia</i> Appendix 15
Acute Pain Service	E	E	D		According to ANZCA doc PS41 (2000) <i>Guidelines on Acute Pain Management</i>
ATLS/EMST trained	E	E	D		Ascertain – & proportion of staff trained
Duty anaesthetist for triage of surgical cases	E	E	E	D	Ascertain
FAST protocol	E	E	D	D	
Echocardiography	E	D	D		Ascertain presence and process for review of practice
Model Criteria	I	II	III	IV	Criteria Specifics
3.6 Operating Theatre					
Staff immediately available 24 hours	E	E	D		Ascertain
Process for triage of booked emergency cases					Ascertain and assess whether time frames for surgery are being audited and met
Emergency OR available within 30 minutes?	E	E	D		Ascertain
Neurosurgical capability	E	E			Ascertain
Operating microscope	E	D			Ascertain
On-site X-ray	E	E	D		Ascertain
Image intensification	E	E			Ascertain

Model Criteria	I	II	III	IV	Criteria Specifics
Cardiopulmonary bypass	E	D			Ascertain
Model Criteria	I	II	III	IV	Criteria Specifics
3.7 Recovery Room					
Recovery Room capability	E	E	D		According to ANZCA guidelines Doc PS4 <i>Recommendations for the post-anaesthesia recovery room</i> Appendix 18
Model Criteria	I	II	III	IV	Criteria Specifics
3.8 Intensive Care Unit (ICU)/ High Dependency Unit (HDU)					
Staffed & equipped in accordance with CICM minimum standards for intensive care units Level 3 (C24 training)	E	E	D		CICM, ANZCA, RACP Doc IC-1 <i>Minimum Standards for Intensive Care Units-</i> Appendix 16 Ascertain ICU level based on prior CICM accreditation
ICU Registrar part of trauma team response	D	D	D		Ascertain
ICU Registrar accompanies transport from ICU to radiology/OR	E	D	D		Ascertain
Isolation rooms/environmental controlled rooms	E	E	D		Ascertain
ATLS/EMST trained	E	E	D		Ascertain – and proportion of staff trained
Tracheostomy and other patient post ICU discharge follow up service	E	D	D		Ascertain
Model Criteria	I	II	III	IV	Criteria Specifics

Model Criteria	I	II	III	IV	Criteria Specifics
3.9 Inpatient trauma unit/ wards					
Patients admitted to one area in the hospital	E	E	D		Ascertain
Nursing staff with in-service training specific for major trauma	E	E	D		Ascertain
Patients admitted under Trauma Service bed card	E	D			Ascertain. Identify documentation of admission and discharge criteria as well as transfer process to and from other admitting units.
24 hour ward surgical & medical staffing cover	E	E	E		Ascertain
Rapid response system for ward emergencies	E	E	E		
Model Criteria	I	II	III	IV	Criteria Specifics
3.10 Allied Health					
Physiotherapy	E	E	D		Ascertain and assess appropriate for volume of trauma workload
Occupational therapy	E	E	D		Ascertain and assess appropriate for volume of trauma workload
Social work/counselling	E	E	D		Family social work/family support available 24 hr Ascertain and assess appropriate for volume of trauma workload
Speech pathology	E	E	D		Ascertain and assess appropriate for volume of trauma workload
Nutritional support	E	E	D		Ascertain and assess appropriate for volume of trauma workload
Orthotics	E	E	D		Ascertain and assess appropriate for volume of trauma workload
Psychology	E	E	D		Ascertain and assess appropriate for volume of

Model Criteria	I	II	III	IV	Criteria Specifics
					trauma workload
Neuro- psychology	E	E	D		Ascertain and assess appropriate for volume of trauma workload
Pharmacy	E	E	D		Ascertain and assess appropriate for volume of trauma workload
Model Criteria	I	II	III	IV	Criteria Specifics
3.11 Rehabilitation					
Rehabilitation – on site	E	D			Ascertain Available within 24 hrs
Rehabilitation – appropriate links to external service	E	E	D		Ascertain Available within 24 hrs. Protocol for transfer
Model Criteria	I	II	III	IV	Criteria Specifics
3.12 Disaster Planning					
Up to date disaster manual for in & out of hospital disasters	E	E	D		Ascertain & review
Demonstrable linkages with regional planning processes	E	E	D		Ascertain & review
Regular tests of the components of disaster planning – including multidisciplinary involvement	E	E	D		Ascertain & review
4. Specialty Services					
Model Criteria	I	II	III	IV	Criteria Specifics
4.1 Imaging Services					
General criteria as established in, ANZCA,	E	E	E		ANZCA document T2 (2000) <i>Recommendations on minimum facilities for safe anaesthesia practice outside operating suites</i>

Australasian Trauma Verification Program - Manual

Model Criteria	I	II	III	IV	Criteria Specifics
RACP accreditation guide					
Geographically close to acute care areas	E	E	D		Ascertain access
Plain X-ray	E	E	E	D	Ascertain Radiographer on site 24/7 For rural, and/or in absence of radiographer, ascertain medical officer training & accreditation for taking x-rays 24 hrs day
Angiography	E	E			Ascertain
CT scan	E	E	D		Ascertain – available within 30 mins
PACS system	E	E	D	D	Ascertain
Ultrasound, including Duplex scanning	E	E			Ascertain Available within 1 hour of request
Echo	E	E			Ascertain 2D or Transoesophageal available within 1 hour of request
Ultrasound	E	E	D		Ascertain
Angiography (digital)	E	E			Ascertain, within 30 minutes 24/7
Angiography (digital) in operating theatre	E	E			Ascertain
Nuclear scanning	E	D			Ascertain
Interventional radiology	E	E			With capacity for large vessel stenting & angiographic embolization. Within 60 minutes for time critical patients 24/7
MRI	E	D			With capacity for mechanical ventilation & monitoring
Teleradiology	E	D	D		Ascertain
Radiographer part of Trauma Team	E	E	E		Confirm radiology has resuscitation facilities & CPR protocols

Model Criteria	I	II	III	IV	Criteria Specifics
24 hour radiology reporting of CT & MRI scans	E	E	D		Ascertain
Radiology Registrar/Consultant reporting of all trauma films within 12 hours	E	E	E		Ascertain
Model Criteria	I	II	III	IV	Criteria Specifics
4.2 Blood Bank/ Pathology					
Blood Delivery	E	E	D		O neg immediate access Group specific 20mins X match 40mins Platelets 30mins FFP 30mins Blood bank facility & technician on site 24 hours arrangement for delivery or
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	E	E			Ascertain Results available

Model Criteria	I	II	III	IV	Criteria Specifics
(Gram stain)					
Carboxyhaemoglobin	E	E	D		Ascertain Results available
Pregnancy Test	E	E	E	E	Ascertain Results available
Model Criteria	I	II	III	IV	Criteria Specifics
4.3 Other Specialty Medical Groups					
Cardiology	E	E			Ascertain
Respiratory	E	E			Ascertain
Nephrology	E	E			Ascertain
Neurology	E	E			Ascertain
Haematology	E	E			Ascertain
Infectious Diseases	E	E			Ascertain
Geriatrics	E	E			Ascertain
Psychiatry	E	E	D		Ascertain
Palliative Care	E	E			Ascertain
Transplant coordinator contact	E	E	D		Ascertain procedure & instructions
Model Criteria	I	II	III	IV	Criteria Specifics
5. Protocols/ Guidelines/ Procedures					
Cervical Spine clearance	E	E	D		Ascertain & review
Management of the pregnant trauma patient	E	E	D		Ascertain & review
Emergency room resuscitative thoracotomy	E	E	D		Ascertain & review
Management of the dying blunt trauma patient in ED	E	E	D		Ascertain & review

Model Criteria	I	II	III	IV	Criteria Specifics
A DVT prophylaxis in trauma	E	E	D		Ascertain & review
Guidelines for the management & transfer of burns patients	E	E	E	E	Ascertain procedure & instructions
Guidelines for the management & transfer of spinal cord injury patients	E	E	E	E	Ascertain procedure & instructions
Guidelines for the management of transfer of major trauma patients to higher level trauma hospital		E	E	E	Ascertain procedure & instructions
Massive blood transfusion protocol	E	E	E		Ascertain & review
Alcohol screening protocol	E	E	E	D	Ascertain & review
Alcohol intervention protocol	E	E	E	D	Ascertain & review

6. Other Trauma Related Activities

No criteria

Model Criteria	I	II	III	IV	Criteria Specifics
<h2>7. References for Model Resource Criteria</h2>					
<ol style="list-style-type: none"> 1. Resources for Optimal Care of the Injured Patient: 1999 [Committee on Trauma American College of Surgeons] 2. Report of the Working Party on Trauma Systems [National Road Trauma Advisory Council 1993] 3. Review of Trauma and Emergency Services – Victoria 1999 – Final Report of the Ministerial Taskforce on Trauma and Emergency Services and the Department Working Party on Emergency and Trauma Services [Human Services Victoria] 4. ANZCA website – www.anzca.edu.au 5. CICM website - www.cicm.org.au 6. ITIM http://www.aci.health.nsw.gov.au/networks/itim – position roles and responsibilities 					
<h2>8. Appendix</h2>					
<h3>Hospital Trauma Committee Criteria</h3>					<p>Appendix 1</p>
<p>Suggested terms of reference:</p> <ul style="list-style-type: none"> • 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 Territorial Health Departments • Provide feedback 					
<h3>Area/Regional Trauma Committee Criteria</h3>					<p>Appendix 2</p>
<p>Suggested terms of reference:</p> <ul style="list-style-type: none"> • 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 Territorial 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. 					

Evidence for Verification

Appendix A

American College of Surgeons, Committee on Trauma Verification Review: does it really make a difference?

Authors

Ehrlich PF., Rockwell S., Kincaid S., and Mucha P Jr.

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Source

Journal of Trauma-Injury Infection & Critical Care. 53(5):811-6, 2002 Nov.

Abstract

BACKGROUND

Although not directly involved in designation per se, the American College of Surgeons (ACS) Committee on Trauma verification/consultation program in conjunction with has set the national standards for trauma care. This study analyzes the impact of a recent verification process on an academic health centre.

METHODS

Performance improvement data were generated monthly from the hospital trauma registry. Forty-seven clinical indicators were reviewed. Three study periods were defined for comparative purposes: PRE (January, June, October 1997), before verification/consultation; CON (April 1999-October 1999), after reorganization; and VER (November 1999-September 2000), from consultation to verification.

RESULTS

Statistically significant ($p < 0.05$) quantitative and qualitative changes were observed in numbers (percent) of patients reaching clinical criteria. These included prehospital, emergency department, and hospital-based trauma competencies. Trauma patient evaluation (including radiology) and disposition out of the emergency department (< 120 minutes) improved in each study section (PRE, 21%; CON, 48%; VER, 76%). Enhanced nursing documentation correlated with improved clinical care such as early acquisition of head computed axial tomographic scans in neurologic injured patients (PRE, 66%; CON, 97%; VER, 95%). Intensive care unit length of stay (< 7 days) decreased (PRE, 87%; VER, 97.8%). Other transformations included increase in institutional morale with recognition of

trauma excellence within the hospital and resurgence of the trauma research programs (60 institutional review board-approved projects).

CONCLUSION

The ACS verification/consultation program had a positive influence on this developing academic trauma program. Preparation for ACS verification/consultation resulted in significant improvements in patient care, enhancement of institutional pride, and commitment to care of the injured patient.

Appendix B

Orthopaedic Trauma Association 16th Annual Meeting

San Antonio, Texas October 12, 13, 14, 2000

Session VII A - Paper #26 1:50 p.m.

Impact of preparation and achievement of ACS level 1 Trauma Verification raises hospital performance and improves patient outcome

Cheryl Holly RN, PhD; Stephen M. DiRusso, MD, PhD; Sara Nealon Cuff, RN; Helga Scharf RN; Thomas Sullivan BS; Peter Nealon BA; Jason Boardman, MD; John A. Savino MD Surgery Department, New York Medical College, Valhalla, NY 10595
Invited Discussant: Brent A. Eastman, MD

Objective:

To assess the impact on patient outcome and hospital performance of preparing for and achieving ACS Level 1 Trauma Verification.

Hospital Setting:

A previously designated state Regional Trauma Centre located adjacent to a major metropolitan area. Preparation for ACS verification began in early 1996 and was completed in early 1998. Final verification took place in April 1999. Data were analyzed before (1994) and after (1998) process.

Hospital System Improvements:

Marked increase in administrative support with trauma organized as one of the hospital's six centres of excellence. Two full-time board certified trauma/critical care surgeons were added to the current six trauma surgeons. Their major focus was trauma care. Trauma support staff was also increased with case managers, a trauma nurse practitioner, additional trauma registrars, and administrative support staff. Education and CQI were markedly expanded starting in 1996.

Results:

There were 1098 trauma patients admitted in 1994, 1658 in 1998. Overall mortality decreased (1994: 7.38%, 1998 5.37%, $p < 0.05$). There was a marked decrease in mortality for severely injured (ISS > 30) patients (1994: 44% mortality [38/86], 1998: 27% [22/80], $p < 0.04$). Average LOS also decreased (1994: 12.22 days, 1998 9.87 days, $p < 0.02$). This

yielded an estimated cost savings for 1998 of greater than \$7,000/patient (total saving estimate of 11.6 million dollars).

Conclusions:

Trauma system improvement as related to achieving ACS Level 1 verification appeared to have a positive impact on survival and patient care. There were cost savings realized which helped alleviate the added expense of this system improvement. The process of achieving ACS Level 1 Verification is worthwhile and can be cost effective.

Appendix C

Analysis of American College of Surgeons trauma consultation program.

Authors

Mitchell FL, Thal ER, Wolfert CC.

Institution

Department of Surgery, University of Missouri, Columbia, USA.

Source

Arch Surg. 1995 Jun;130(6):578-83; discussion 583-4.

Objective:

To identify the criteria deficiencies found during peer consultation of hospitals and the relationship to subsequent verification.

Methods:

Between September 1987 and December 1992, 52 hospitals had consultation visits using American College of Surgeons criteria. Each report was studied for deficiencies, frequency of deficiencies, and relationship to verification.

Results:

There are 108 American College of Surgeons criteria. Thirty-five different criteria deficiencies were found. The number of deficiencies per hospital ranged from zero to 12.

The more frequent deficiencies included a lack of the following: quality improvement, 35 (67%); trauma service, 20 (38%); trauma surgeon in emergency department, 20 (38%); 24-hour operating room availability, 17 (33%); trauma registry, 17 (33%); trauma continuing medical education, 16 (31%); trauma director, 15 (29%); computed tomography technician in hospital, 15 (29%); research, 14 (27%); trauma coordinator, 14 (27%); and neurosurgeon availability, 13 (25%). No hospital that lacked commitment of surgeons (n = 12) or hospital (n = 3) requested a verification visit. Twenty-four hospitals (46%) achieved verification by February 1994. Twenty-eight hospitals had six or fewer deficiencies, with 19 (68%) verified. Twenty-four hospitals had seven or more deficiencies, with only five (21%) subsequently verified. Verification visits followed consultation by 3 to 52 months. Two hospitals with nine

deficiencies were verified after 30 and 48 months, although one failed its first verification visit.

Conclusions:

American College of Surgeons consultation assists hospitals to identify their trauma centre capability and appears to improve their ability to pass subsequent trauma centre verification. Most criteria deficiencies are correctable. Lack of commitment by the surgeons or hospital is difficult to correct. There is an inverse relationship between the number of deficiencies and subsequent verification.