Provision of Trauma Care
Policy Briefing

This policy briefing outlines the view of the Royal College of Surgeons of England in relation to the planning and provision of care for seriously injured patients.

Background

Trauma can be defined as physical injury caused by events such as road traffic accidents, falls, explosions, shootings, or stabbings. The term ‘major trauma’ is therefore used to describe multiple injuries involving different tissues and organ systems that are, or have the potential to be, life threatening. Trauma patients require specialist care from a multidisciplinary group of professionals.

Injury is a major cause of death across all age groups, with over 16,000 deaths in England and Wales each year. Evidence from the United States shows that positive outcome for major trauma patients depends on them being delivered to a hospital that has the appropriate range of specialist resources to treat multiple injuries. Survival is greatly improved in such hospitals where clinicians can maintain their skills by treating a greater number of trauma patients and patients have access to specialist resources and equipment.

Increased specialisation within surgery means that the specialist skills and equipment required for major trauma patients cannot be available at every hospital. This necessitates the need to re-evaluate the organisation and delivery of trauma care across the country.

Our 2000 report *Better Care for the Severely Injured* recommended a national plan for trauma services in England, Wales and Northern Ireland. The College called for defined ‘trauma systems’ to be established in each region comprising major trauma centres and other hospitals operating within a network to meet the needs of all injured patients.

The lack of political will and central direction to take decisions on the location of major trauma centres has meant that local issues (such as the service configuration of A&E departments) have impeded the development of defined trauma systems. The likelihood of dying from injuries has remained static since 1994, despite great improvements in trauma care, training and education. In America, where major trauma centres have been identified, deaths from major injury have reduced by 25%.

Given the current focus on the need for service reorganisation (for example, Lord Darzi’s review of healthcare in London, and his wider remit to review the NHS), it is timely for the College to restate its policy on the provision of trauma care.

The College considers that trauma care should be based on a network model (see below) incorporating a range of specialist units in a ‘trauma system’ to care for all
injured patients in a given region. As a minimum, major trauma centres should admit more than 250 critically injured patients per year\(^5\). In England this would equate to one major trauma centre per 3-4 million population, depending on location. We are therefore calling for a national plan for the identification of specialist major trauma facilities of which there should be no more than 12-16 very large centres.

**Defining Trauma Systems**

Within each geographical region there should be a network of units geared to treat trauma patients ranging from those with life threatening conditions, to those with less complex injuries. This ‘trauma system’ would need to integrate pre-hospital care (i.e. the care delivered by paramedics at the scene of the injury), the initial journey to a suitable unit, inter-hospital transfer (where required for patients in need of more specialist treatment), definitive hospital treatment and rehabilitation. Each region should have a major trauma plan which defines the pathway of care for severely injured patients, identifies the location and capability of each trust/hospital within the trauma system and outlines ambulance bypass protocols and thresholds for transferring patients to more specialist units.

For a unit to be defined as a ‘major trauma centre’ it must provide, 24-hours a day, a fully staffed emergency department, a consultant-led resuscitative trauma team, dedicated trauma theatres and operating lists, the presence of all major surgical specialties on a single site (orthopaedic trauma, general and vascular surgery, neurosurgery, plastic surgery, cardiothoracic surgery, head and neck surgery, urology), interventional radiology (which uses radiological techniques to place wires, tubes or other instruments inside a patient to diagnose and treat various conditions) and anaesthesia with appropriate intensive care facilities.

The majority of injured patients (for example, patients with simple fractures or single injuries) do not need to access major trauma facilities. To do so would cause inconvenience for patients (due to the potential for longer travel times), and also reduce the quality of care provided in both the specialist unit (which may become overburdened with ‘routine’ cases) and in surrounding hospitals (where staff would be unable to maintain their skills in treating injured patients).

Once a national plan for the location of major trauma centres has been agreed, Strategic Health Authorities, working with Primary Care Trusts, will need to identify the number and location of hospitals within the region to deal with less severely injured patients.

SHAs will require professional assistance in developing regionalised trauma systems and deciding on the location of, and services to be provided in local and district hospitals which are part of the network.

It is vital that NHS administrative boundaries and current health policy reforms which introduce competition and contestability to the provision of services do not constrain the organisation of such a system of care – collaboration and not competition is required.

The staffing and resources required to treat major injuries are costly, but with over 16,000 injury-related deaths per year and a much higher number of disabilities caused by injuries, trauma care must be made a priority. Central resources will be required to assist the establishment of major trauma centres and mechanisms to meet the on-going costs for hospitals treating injured patients should be employed to
ensure the financial stability of these centres. Payment for treating major injuries should be outside of the payment-by-results mechanism.

**Emergency Department (ED) or Trauma Centre?**

The development of major trauma centres should not have any bearing on the provision of local emergency services; these are separate issues. It simply facilitates the concentration of resources so that the relatively small number of critically injured patients can receive the very best level of care, allowing other, less severely injured patients to receive treatment in the most appropriate location.

It is helpful to note the differences between the staff, equipment and resources available in Emergency Departments (A&E) and specialist trauma centres.

Emergency Departments provide rapid diagnosis and treatment for patients who are injured or fall ill. Conditions treated in EDs include unconsciousness, heavy bleeding, suspected broken bones, suspected heart attack, difficulty in breathing, asthma attack, chest pain, etc. The department is staffed by clinicians with skills in emergency medicine. After a decision is made to admit a patient to the hospital, ED staff transfer the patient to the appropriate service or specialty.

By contrast a trauma service is staffed by a multidisciplinary team of surgeons, physicians, intensivists (specialist anaesthetists) and specialist nurses. It has the back up of all surgical specialties and appropriate facilities for critical care.

Many EDs will play a vital role in the trauma system for each region. They will have the resources to treat the majority of less severe injuries and provide emergency resuscitation, stabilisation and transfer of patients requiring more specialist care.

**Audit, Governance and Research**

It is essential for trauma systems to undergo a continuous process of evaluation, governance and performance improvement. All hospitals receiving trauma patients should submit data to the Trauma Audit Research Network (TARN), currently only 60% do so. Trust chief executives should encourage compliance as part of their responsibilities for clinical governance. Research into trauma will continually improve care and outcomes, and will help to develop evidence-based plans for disaster and mass casualty incidents.

**The College’s Role**

The College has demonstrated its commitment to trauma care by providing training and education in trauma care for surgeons and other clinicians via the Advanced Trauma Life Support course (ATLS®), and for paramedics via the Pre-hospital Trauma Life Support Course (PHTLS). These courses are important to ensure that pre-hospital and hospital-based care for trauma patients is delivered seamlessly.

Our invited review service offers independent, professional advice and support to hospitals on a range of service delivery issues. Through this process, the College and relevant specialist associations can make recommendations for service improvement in trauma care.
The College, via its Professional Standards division, will also examine the feasibility of defining the resources required at each type of hospital within the trauma system with a view to offering an accreditation service to hospitals within each network.

**Key Points**

The College is concerned with setting, maintaining and improving standards of surgical care for patients. In order for injured patients to receive the best care:

- The provision of trauma care must be considered a priority by the government and Department of Health.
- Care for injured patients must be organised on a networked basis to create a ‘trauma system’ in each region.
- The government and Department of Health must embark upon a programme to identify specialist major trauma centres to treat critically injured patients. In England, this would equate to 12-16 centres, each serving populations of between 3-4 million, depending on location and geography.
- Once a national plan for the establishment of major trauma centres has been agreed, Strategic Health Authorities and Primary Care Trusts must identify the number and location of hospitals within the region to deal with less severely injured patients.
- Mechanisms to provide central resources and appropriate levels of payment for providing services to injured patients must be developed.
- NHS administrative boundaries and health reforms which bring ‘market’ principles to the NHS must not hinder the organisation of trauma systems.
- All hospitals receiving injured patients should submit data to the Trauma Audit Research Network (TARN) in order to facilitate the development of standards to continually improve trauma care.

**Statistics**

- Regionalisation of care to specialist trauma centres reduces mortality by 25% and length of stay by 4 days.\(^4\)

- High volume trauma centres reduce death from major injury by up to 50%.\(^5\)

- Time from injury to definitive surgery is the primary determinant of outcome in major trauma.\(^6\) (Not time to arrival in the nearest emergency department)

- Major trauma patients managed initially in local hospitals are 1.5 to 5 times more likely to die than patients transported directly to trauma centres.\(^7\).

- There is an average delay of 6 hours in transferring patients from a local hospital to a specialist centre. Delays of 12 hours or more are not uncommon. Across the UK, almost all ambulance bypasses can be achieved in <30 minutes.\(^7,8\)

- Long prehospital times have a minimal effect on trauma mortality or morbidity – even in very rural areas such as the west of Scotland.\(^8\)

- Trauma centres have significant improvements in quality and process of care. This effect extends to non-trauma patients managed in these hospitals.\(^9,10\)

- Costs per life saved and per life-year saved are very low compared with other comparable medical interventions.\(^11,12\)
• Currently UK mortality for severely injured trauma patients who are alive when they reach a hospital is 40% higher than the US\textsuperscript{13}.

• Without regionalisation, trauma mortality and morbidity in the UK will remain unacceptably high. The likelihood of dying from injuries has remained static since 1994, despite improvements in trauma care, education & training\textsuperscript{14}.

References
\textsuperscript{1} Office of National Statistics, 2005
\textsuperscript{2} The Royal College of Surgeons of England/British Orthopaedic Association \textit{Better care for the severely injured.} July 2000
\textsuperscript{3} A systematic review and meta-analysis comparing outcome of severely injured patients treated in trauma centers following the establishment of trauma systems. Celso, B, et al. J Trauma 2006: 60:371-78
\textsuperscript{5} Relationship Between Trauma Center Volume and Outcomes. Nathens A et al, JAMA. 2001;285:1164-1171
\textsuperscript{6} Resources for Optimal Care of the Injured Patient. American College of Surgeons, 1999
\textsuperscript{7} Modernising Major Trauma Services in London. London Severe Injuries Working Group, 2001
\textsuperscript{9} Enhanced Trauma Program Commitment at a Level 1 Trauma Center. Effect on Process & Outcome of Care. Cornell EE et al. Arch Surg 2003;138:838-843
\textsuperscript{12} What price commitment – What Benefit? The cost of a saved life in a developing Level 1 trauma center. Rotondo MF et al. AAST 2006 Annual Scientific Meeting
\textsuperscript{14} UK Trauma Audit & Research Network 2001-2004 dataset, US national Trauma Databank 2004