# Trauma: service delivery

## NICE guideline: short version

## Draft for consultation, August 2015

**This guideline covers** the delivery of trauma services. It includes recommendations on:

- pre-hospital triage
- transferring patients with major trauma
- pre-alert procedures
- procedures for receiving patients
- transfer between emergency departments
- organisation of hospital major trauma services
- documentation
- monitoring and audit
- information and support
- training and skills
- access to major trauma services.

**Who is it for?**

- People with trauma or suspected trauma, their families and carers.
- Commissioners of trauma services, ambulance and hospital trust boards, medical directors, and senior managers in ambulance trusts.
- Healthcare professionals and practitioners who provide care for people with trauma or suspected trauma in pre-hospital and hospital settings.

This version of the guideline contains the recommendations, context and recommendations for research. The Guideline Committee's discussion and the evidence reviews are in the full guideline.

Other information about how the guideline was developed is on the project page. This includes the scope, and details of the Guideline Committee and any declarations of interest.

# Contents

# Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in Your care.

Using NICE guidelines to make decisions explains how we use words to show the strength of our recommendations, and has information about safeguarding, consent and prescribing medicines.

In this guideline 'children' refers to under 16s. All recommendations apply to both children and adults unless otherwise specified.

## *Pre-hospital triage*

### Recommendations for ambulance trust boards, medical directors and senior managers in ambulance trusts

1.1.1 Provide a pre-hospital major trauma triage tool to differentiate between people who should be taken to a major trauma centre and those who should be taken to a trauma unit for definitive management.

1.1.2 Choose a pre-hospital major trauma triage tool that includes assessment of physiology and anatomical injury and takes into account the different needs of older patients, children and other high-risk populations (such as patients who take anticoagulants, pregnant women and patients with co-morbidities).

1.1.3 Support practitioners using the major trauma triage tool with immediate clinical advice from the ambulance control centre.

1.1.4 Train practitioners to use the major trauma triage tool.

1.1.5 Monitor and audit use of the major trauma triage tool as part of the trauma network's quality improvement programme.

## *1.2 Transferring patients with major trauma*

**Recommendations for practitioners in pre-hospital settings**

1.2.1 Be aware that the optimal destination for patients with major trauma is usually a major trauma centre. This may vary regionally and the pre-hospital major trauma triage tool may reflect this.

1.2.2 Spend only enough time at the scene to give immediate life-saving interventions.

1.2.3 Divert to the nearest trauma unit if a patient with major trauma needs a life-saving intervention, such as drug-assisted rapid sequence induction of anaesthesia and intubation, that cannot be delivered by the pre-hospital team.

**Recommendations for senior practitioners in trauma units**

1.2.4 Spend only enough time to give life-saving interventions at the trauma unit before transferring patients for definitive treatment.

1.2.5 Be aware that the major trauma centre is the ultimate destination for definitive treatment.

## *1.3 Pre-alert procedures*

**Recommendations for medical directors, senior managers and senior practitioners in pre-hospital settings within a trauma network**

1.3.1 Provide a structured system for recording and receiving pre-alert information. Ensure that the information recorded includes:

- age and sex of the injured person
- time of incident
- mechanism of injury
- injuries suspected
- signs, including vital signs, and Glasgow Coma Scale
- treatment so far
- estimated time of arrival at emergency department

- requirements (such as bloods, specialist services, on-call staff, trauma team or tiered response by trained staff)
- the ambulance call sign, name of the person taking the call and time of call.

**Recommendation for practitioners**

1.3.2 Ensure that pre-hospital documentation, including the recorded pre-alert information, is made available to the trauma team quickly and placed in the patient's hospital notes.

**Recommendations for senior managers and senior practitioners in emergency departments**

1.3.3 Ensure that a senior nurse or trauma team leader receives the pre-alert information and determines the level of trauma team response.

1.3.4 Ensure that the trauma team leader is easily identifiable to receive the handover and the trauma team is ready to receive the information.

## *1.4 Procedures for receiving patients in trauma units and major trauma centres*

**Recommendations for senior managers in trauma units**

1.4.1 Ensure that multispecialty trauma teams are activated immediately in trauma units to receive patients with major trauma.

1.4.2 Do not use a tiered team response in trauma units.

1.4.3 Have a paediatric trauma team available immediately for children with major trauma.

**Recommendations for senior managers and senior practitioners in major trauma centres**

1.4.4 Consider a tiered team response to receive patients in major trauma centres. This may include:

- a standard multispecialty trauma team **or**
- a standard multispecialty trauma team plus specialist involvement (for example, code red for major haemorrhage) and mobilisation of supporting departments and services such as transfusion, interventional radiology and surgery.

1.4.5 Have a paediatric trauma team available immediately for children with major trauma.

## *1.5 Transfer between emergency departments*

**Recommendations for ambulance and hospital trust boards, medical directors and senior managers**

1.5.1 Provide a protocol for the safe and rapid transfer of patients who need definitive specialist intervention.

1.5.2 Train clinical staff involved in the care of patients with major trauma in the transfer protocol.

1.5.3 Review the transfer protocol regularly.

**Recommendations for senior managers in hospital trusts and senior practitioners in emergency departments**

1.5.4 Ensure that patients with major trauma who need critical interventions at a major trauma centre leave the sending emergency department within 30 minutes of the decision to transfer.

## *1.6 Organisation of hospital major trauma services*

**Recommendations for hospital trust boards, senior managers and commissioners**

1.6.1 Hospital major trauma services should have responsibility and authority for the governance of all major trauma care in hospital.

1.6.2 Provide a dedicated major trauma service for patients with major trauma that consists of:

- a dedicated trauma ward for patients with multisystem injuries
- facilities to deliver specialist management for patients with comorbidities and acute medical needs
- a designated consultant available to contact 24 hours a day, 7 days a week who has responsibility and authority for the hospital trauma service and leads the multidisciplinary team care
- a named member of clinical staff (a key worker, often a senior nurse) assigned at each stage of the care pathway who coordinates the patient's care.

**Recommendation for senior managers and key workers in major trauma centres**

1.6.3 The key worker should:

- act as a single point of contact for patients, family members and carers, and the healthcare professionals involved in their care
- attend all ward rounds and ensure that all action plans from the ward round are carried out in a timely manner
- provide patient advocacy
- ensure that there is a management plan and identify any conflicts
- organise ongoing care including discharge planning, transfers and rehabilitation.

## *1.7 Documentation*

Our draft guideline on major trauma contains recommendations for healthcare professionals and practitioners on documentation.

**Recommendations for ambulance and hospital trust boards, senior managers and commissioners within a trauma network**

1.7.1 Ensure that pre-hospital documentation is standardised within a trauma network, for example using the Royal College of Physicians' Professional guidance on the structure and content of ambulance records.

1.7.2 Ensure that hospital documentation is standardised within a trauma network and there are systems that allow clinicians access to all relevant and current clinical data at different points in the care pathway. This could be by using compatible electronic medical records such as a picture archiving and communication system (PACS) and an image exchange portal.

## *1.8 Monitoring and audit*

**Recommendations for ambulance and hospital trust boards, medical directors, senior managers and commissioners**

1.8.1 Ensure that there is a major trauma audit programme to evaluate systems, services and processes as part of the major trauma network's quality improvement programme.

1.8.2 Ensure that a major trauma audit programme includes:

- regular review of audits undertaken locally and regionally
- registration with the Trauma Audit and Research Network (TARN)
- accurate and complete data submission to TARN
- quarterly review of TARN reports.

1.8.3 A national trauma audit system should collect and analyse data to enable providers of major trauma services to review their local, regional and national trauma performance.

## *1.9 Information and support for patients, family members and carers*

Our draft guideline on major trauma contains recommendations for healthcare professionals and practitioners on information and support.

### Recommendation for ambulance and hospital trust boards, senior managers and commissioners

1.9.1 Establish a protocol for providing information and support to patients, family members and carers.

### Recommendations for practitioners and healthcare professionals providing information to people with major trauma

#### *Providing support*

1.9.2 The trauma team structure should include a clear point of contact for providing information to the patient, their family members or carers.

#### *Support for children and vulnerable adults*

1.9.3 Allocate a dedicated member of staff to contact the next of kin and provide support for unaccompanied children and vulnerable adults.

#### *Providing information*

1.9.4 Document all key communications with patients, family members and carers about the management plan.

#### *Providing information about transfer from an emergency department to a ward*

1.9.5 For patients who are being transferred from an emergency department to a ward, provide written information that includes:

- the name of the senior healthcare professional who spoke to them in the emergency department
- how the hospital and the trauma system works (major trauma centres, trauma units and trauma teams).

***Providing information about transfer from an emergency department to another centre***

1.9.6 For patients who are being transferred from an emergency department to another centre, provide verbal and written information that includes:

- the reason for the transfer, focusing on how specialist management is likely to improve the outcome
- the location of the receiving centre and the patient's destination within the receiving centre
- the name and contact details of the person responsible for the patient's care at the receiving centre
- the name of the senior healthcare professional who spoke to them in the emergency department.

## *1.10 Training and skills*

**Recommendations for ambulance and hospital trust boards, medical directors and senior managers**

1.10.1 Provide each healthcare professional and practitioner within the trauma service with the training and skills to deliver, safely and effectively, the interventions they are required to give, in line with the NICE guidelines on non-complex fractures, complex fractures, major trauma and spinal injury assessment.

1.10.2 Enable each healthcare professional and practitioner who delivers care to patients with trauma to have up-to-date training in the interventions they are required to give.

1.10.3 Provide education and training courses for healthcare professionals and practitioners who deliver care to children with major trauma that include the following components:

- safeguarding

- taking into account the radiation risk of CT to children when discussing imaging for them
- the importance of the major trauma team, the roles of team members and the team leader, and working effectively in a major trauma team
- managing distressed relatives and breaking bad news
- the importance of clinical audit and case review.

## *1.11 Access to major trauma services*

**Recommendation for ambulance and hospital trust boards, senior managers and commissioners**

1.11.1 Ensure that people with major trauma have access to services that can provide the interventions recommended in this guideline and in the NICE guidelines on fractures (non-complex), fractures (complex), major trauma and spinal injury. See the appendix for the recommendations for pre-hospital and hospital management of major trauma that might have particular implications for service delivery.

**Drug-assisted rapid sequence inducton of anaesthesia and intubation – recommendation for ambulance and hospital trust boards, medical directors and senior managers**

1.11.2 Ensure that drug-assisted rapid sequence induction of anaesthesia and intubation is available for patients with major trauma who cannot maintain their airway and/or ventilation as soon as possible and within 30 minutes of the initial call to the emergency services. As far as possible this should be provided at the scene of the incident and not by diverting to a trauma unit. (For more information see recommendations 1.1.1–1.1.4 in the NICE draft guideline on major trauma.)

**Interventional radiology and definitive open surgery – recommendation for ambulance and hospital trust boards, medical directors and senior managers**

1.11.3 Ensure that interventional radiology and definitive open surgery are equally and immediately available for haemorrhage control in all patients with active bleeding. (For more information see recommendation 1.4.41 in the NICE draft guideline on major trauma and recommendation 1.2.16 in the NICE draft guideline on fractures [complex].

To find out what NICE has said on topics related to this guideline, see our web page on injuries, accidents and wounds.

# Implementation: getting started

This section will be completed in the final guideline using information provided by stakeholders during consultation.

To help us complete this section, please use the stakeholder comments form to give us your views on these questions:

1. Which areas will have the biggest impact on practice and be challenging to implement? Please say for whom and why.

2. What would help users overcome any challenges? (For example, existing practical resources or national initiatives, or examples of good practice.)

# Context

According to the National Audit Office's 2010 report Major trauma care in England, 'There is unacceptable variation in major trauma care in England depending upon where and when people are treated. Care for patients who have suffered major trauma, for example following a road accident or a fall, has not significantly improved in the past 20 years despite numerous reports identifying poor practice, and services are not being delivered efficiently or effectively.'

Since then regional trauma networks have been developed across England. Within these networks major trauma centres provide specialised care for patients with multiple, complex and serious major trauma injuries, and working closely with local trauma units. This guideline, together with the NICE guidelines on non-complex fractures, complex fractures, major trauma and spinal injury assessment, aims to address areas of uncertainty in the delivery of trauma services.

This guideline includes recommendations on:

- pre-hospital triage
- the destination of patients with major trauma
- the organisation of a hospital major trauma service
- documentation
- national audit systems to improve performance
- provision of information and support for patients with trauma, their their family members and carers.

There are other national documents that are relevant to major trauma services, including the NHS standard contract for major trauma service (all ages).

# Recommendations for research

The Guideline Committee has made the following recommendations for research.

## *1 Audit*

What is the clinical and cost effectiveness of collecting long-term outcomes in a national trauma audit system?

### Why this is important

The UK has a national audit of trauma services in place for adults (Trauma Audit Research Network [TARN]) and entry to this audit is linked to best practice tariff for major trauma centres. An equivalent audit, TARNlet, has been developed for children. Data are collected on clinical observations,

timing and staffing in the acute phase in patients who are treated at a major trauma centre. Data on longer-term outcomes, for example return to normal activities, after the acute phase are not collected, despite acknowledgement that outcomes are important to monitor the effectiveness of interventions.

## *2 Rehabilitation*

What are the barriers to people with major trauma receiving early rehabilitation after rehabilitation assessment? What changes to services are needed to overcome these barriers?

### Why this is important

Major trauma often results in people living with disability that results in a reduced quality of life. It is thus imperative to maximise access to rehabilitation to speed physical and psychological recovery after injury.

A proportion of patients will have complex needs necessitating inpatient rehabilitation from a multidisciplinary team with expertise. A larger group of patients will need ongoing support, rehabilitation and re-enablement once they are discharged home. The major trauma best practice tariff advises that every patient with an Injury Severity Score of 9 or more in either a major trauma centre or a trauma unit should have their rehabilitation needs assessed, and that a rehabilitation prescription should be provided for all patients with rehabilitation needs. The rehabilitation prescription is used to document the rehabilitation needs of patients and identify how their needs should be addressed. It is unclear whether adequate inpatient and outpatient rehabilitation services for patients with major trauma exist or, if they do exist, what barriers prevent people from using them.

## *3 Dedicated transfer service*

Is it clinically and cost effective to provide a dedicated service to transfer patients with major trauma from the emergency department for ongoing care?

### Why this is important

Patients with major trauma may need rapid transfer from the local emergency department to a major trauma centre for specialist care. The local trauma

unit's clinical team can transfer them without delay but may not be able to provide specialist treatment during the transfer. A specialist team sent by the receiving centre can provide this specialist care during transfer but the transfer may be delayed while waiting for the specialist team to arrive at the local trauma unit.

## *4 National pre-hospital triage tool*

A national pre-hospital triage tool for major trauma should be developed and validated.

### Why this is important

Pre-hospital triage tools identify patients who need to be taken to a major trauma centre, bypassing the local emergency department. They are also used to generate pre-alert or standby calls for a trauma team. Most triage tools in the UK use physiological parameters with diagnostic cut-offs and categorical variables such as mechanism of injury. However, the parameters used, and the weighting given to each parameter, differ across the tools. A national pre-hospital triage tool should be developed and validated that will accurately identify where a patient needs to be taken. This should, lead to improved patient outcomes and reduced costs.

# Appendix Recommendations that might have particular implications for service delivery

Tables 1 and 2 below list recommendations for pre-hospital and hospital management of major trauma in the NICE draft guidelines on fractures (complex), major trauma, trauma: service delivery (this guideline) and spinal injury that might have particular implications for service delivery. They do not list all the services needed to provide care for patients with major trauma.

The recommendations were reviewed by the Guideline Committee to identify those with an impact on services through:

- timing – the timing an intervention should be given
- destination of the patient – triaging decisions, initial destination or secondary transfer
- availability of a service – the routine availability of an intervention
- staff skills – expertise not routinely available.

The tables are arranged by clinical area, in alphabetical order.

**Table 1 Pre-hospital management of major trauma: recommendations with implications for service delivery**

| Clinical area | Interventions | Recommendations |
|---|---|---|
| Airway management | Basic airway manoeuvres and adjuncts | Major trauma recommendations 1.1.2 and 1.1.4 |
| | Drug-assisted rapid sequence induction of anaesthesia and intubation, delivered within 30 minutes of the initial call to the emergency services | Major trauma recommendations 1.1.1 and 1.1.3<br>Trauma: service delivery recommendation 1.11.2 |
| | Supraglottic devices | Major trauma recommendation 1.1.4 |
| Chest trauma | Open thoracostomy | Major trauma recommendation 1.2.5 |
| | Needle decompression | Major trauma recommendation 1.2.5 |
| | Ultrasound performed by specialist team | Major trauma recommendation 1.2.2 |
| Circulatory access | Peripheral venous access | Major trauma recommendations 1.4.17 and 1.4.18 |
| | Intra-osseous access | Major trauma recommendations 1.4.17 and 1.4.18 |
| Fracture, open | Prophylactic antibiotic treatment, delivered within 1 hour of injury | Fractures (complex) recommendation 1.1.11 |
| Fracture, pelvic | Pelvic binder application, including purpose-made pelvic binders and improvised pelvic binders for children | Fractures (complex) recommendations 1.1.7 and 1.1.8 |
| Spinal injury | In-line spinal immobilisation | Spinal injury recommendations 1.1.2, 1.1.4, 1.1.7, 1.1.11 |
| | Assessment using Canadian C-spine rule | Spinal injury recommendations 1.1.5 and 1.1.6 |

## Table 2 Hospital management of major trauma: recommendations with implications for service delivery

| Clinical area | Interventions | Recommendations |
|---|---|---|
| Circulatory access | Peripheral intravenous access | Major trauma recommendation 1.4.19 |
| | Intra-osseous access | Major trauma recommendation 1.4.19 |
| Documentation | Standardised documentation used throughout a trauma network | Trauma: service delivery recommendations 1.7.1 and 1.7.2 |
| | Pre-alert information received by senior nurse or trauma team leader, who determines the level of trauma team response | Major trauma recommendation 1.7.4 |
| | Documentation completed by designated member of trauma team and checked by trauma team leader | Major trauma recommendations 1.7.8 and 1.7.9 |
| Haematology | Immediate haematology consultation for anticoagulation reversal | Major trauma recommendation 1.4.12 and 1.4.13 |
| | Laboratory testing of coagulation to guide blood product protocol | Major trauma recommendation 1.4.29 |
| | Plasma and red blood cells for fluid replacement | Major trauma recommendations 1.4.26 and 1.4.27 |
| Information and support for patients, family members and carers | A healthcare professional to facilitate delivery of information | Major trauma recommendation 1.8.2<br>Trauma: service delivery recommendation 1.6.3<br>Fractures (complex) recommendation 1.4.1<br>Spinal injury recommendation 1.8.2 |
| | A dedicated member of staff for unaccompanied children and vulnerable adults to contact next of kin and provide personal support | Fractures (complex) recommendation 1.4.3<br>Major trauma recommendation 1.8.5<br>Trauma: service delivery recommendation 1.9.3<br>Spinal injury recommendation 1.8.6 |
| Radiology, imaging | Immediate CT | Major trauma (consider) recommendations 1.3.4 and 1.4.32 |
| | Whole-body CT | Fractures (complex) recommendation 1.2.8<br>Major trauma recommendation 1.4.35 |
| | Immediate eFAST (extended focused assessment with sonography for trauma) | Major trauma (consider) recommendation 1.3.3 |
| | FAST (focused assessment with sonography for trauma) | Major trauma recommendation 1.4.30 |

| | | |
|---|---|---|
| | Ultrasound | Major trauma (consider) recommendation 1.3.5 |
| | X-ray | Major trauma recommendations 1.3.3 (consider immediate), 1.3.5 (consider) and 1.4.30 |
| | Immediate radiology consultation to interpret results of imaging | Spinal injury recommendation 1.5.1 |
| Radiology, interventional | Interventional radiology for haemorrhage control | Trauma: service delivery recommendation 1.11.3<br>Fractures (complex) recommendation 1.2.16<br>Major trauma recommendations 1.4.41–1.4.44 |
| Surgery | Damage control surgery | Major trauma recommendation 1.4.38 |
| | Definitive surgery | Major trauma (consider) recommendations 1.4.39 and 1.4.40 |
| | Immediate surgery to explore hard signs of vascular injury | Fractures (complex) recommendation 1.2.3 |
| Surgery, neurosurgery and spinal | Specialist neurosurgical or spinal surgeon on call immediately for patients with a spinal cord injury | Spinal injury recommendations 1.6.1 and 1.6.2 |
| | Local spinal cord injury centre consultant | Spinal injury recommendation 1.6.3 |
| Surgery, orthopaedic | Surgery for pilon fractures, performed within 24 hours of the injury | Fractures (complex) recommendation 1.2.31 |
| Surgery, orthopaedic and plastic | Surgery performed concurrently by consultants in orthopaedic and plastic surgery to achieve debridement, fixation and cover of an open fracture | Fractures (complex) recommendation 1.2.26 |
| Surgery, pelvic | Consultation with pelvic surgeon for unstable pelvic fracture | Fractures (complex) recommendation 1.2.17 |
| Wound care | Negative pressure wound therapy for open fracture wounds | Fractures (complex) recommendation 1.2.30 |
| | Photographs of open fracture wounds, taken in accordance with a protocol | Fractures (complex) recommendation 1.3.4 |

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