# ENHANCEMENT OF MAJOR TRAUMA SERVICES IN SCOTLAND

## Purpose:

FOR DECISION

## Title:

ENHANCEMENT OF MAJOR TRAUMA SERVICES IN SCOTLAND

## Source & Rationale:

In June 2012 the NPF agreed that a subgroup should be established to explore possible ways to enhance major trauma services in Scotland.

## Key Issues:

Following developments in England and the publication of a Report by the Trauma Working Group of the Royal College of Surgeons of Edinburgh, the Cabinet Secretary agreed that work should be undertaken under the auspices of the NPF to explore possible ways to enhance major trauma services in Scotland. In June 2012 the NPF agreed that a subgroup should be established.

The attached paper outlines the scope, remit and membership of the NPF major trauma subgroup.

Four meetings of the subgroup have been planned. It is expected that the subgroup will report to the NPF on its recommendations for enhancing major trauma services in Scotland by Spring 2013.

## Actions required:

The group is invited to discuss and agree the remit of the group.

## Author:

Chris Roberts

## Date:

November 2012
ESTABLISHING A NPF MAJOR TRAUMA SUBGROUP

Purpose
This paper outlines the suggested remit, scope, tasks and membership of the NPF subgroup which is to be established to consider ways to enhance major trauma services in Scotland.

Background
Following developments in England and the publication of a Report by the Trauma Working Group of the Royal College of Surgeons of Edinburgh, the Cabinet Secretary has agreed that work should be undertaken under the auspices of the NPF to explore possible ways to enhance major trauma services in Scotland. In June 2012 the NPF agreed that a subgroup should be established (see paper at Annex A).

Remit
The proposed remit of the NPF subgroup, which should be formalised at the first meeting of the group, is suggested as:

The remit of the NPF subgroup is to explore possible ways of enhancing current major trauma services in Scotland. The group will report to the NPF on its recommendations for enhancing major trauma services in Scotland by spring 2013.

Scope
The scope of the subgroup is limited to that of major trauma care in Scotland. Furthermore the subgroup should only seek to enhance existing services. Altering the scope of the subgroup requires NPF approval or instruction.

Tasks
The NPF subgroup should develop a national quality framework to deliver major trauma care across Scotland, which will support appropriate evidence based pathways to improve patient outcomes. This should include the following proposed tasks:

- Describe the current configuration of major trauma services in Scotland
- Set out the inter-dependencies and co-located services which are required for treating major trauma patients
- Define and describe a quality framework for major trauma services including a model of care which ensures that there are clear patient pathways which span:
  - pre-hospital care;
  - acute trauma care;
  - surgery;
  - ongoing care;
  - reconstruction; and
  - rehabilitation

In developing this framework consideration must be given to the involvement of multidisciplinary teams, the use of telehealth and the challenge posed by Scotland’s geography.
- Assess the current data collection for major trauma services in Scotland and advise on any further audit requirements
- Health Impact Assessment - this should set out the impact of different proposals to establish high quality care on local populations
- Develop a communications plan to engage with key stakeholders (workshops/email/newsletter) on this proposed framework and its progress

As a starting point the Subgroup should consider the recommendations contained within the Trauma Care in Scotland Report compiled by the Royal College of Surgeons Edinburgh and the Regional Networks for Major Trauma Report by the NHS Clinical Advisory Group (Department of Health).

**Suggested Membership**

**Chair:**  Caroline Selkirk, Deputy Chief Executive, NHS Tayside

Jennifer Armstrong  Medical Director, NHS GG&C
Gordon Birnie  Medical Director (Operational Division), NHS Fife
Euan Dickson  General Surgeon, NHS GG&C
Chris Driver  Paediatric Surgeon, NHS Grampian
Mike Fried  Consultant Anaesthetist, NHS Lothian, and President of the Scottish Intensive Care Society
Douglas Gentleman  CMO Advisor for Rehabilitation Medicine
Peter Gent  Regional Planning, NoSPG
Stephen Hearns  Lead Consultant, EMRS
Jan Jansen  Consultant in General Surgery and Intensive Care, NHS Grampian
Michael Johnston  Consultant in Emergency Medicine, NHS Tayside
John Keating  Consultant Orthopaedics Surgeon, NHS Lothian
Sean Kelly  Trauma and Orthopaedics Surgeon, NHS Highland
Heather Knox  Regional Planning, WoSPG
Alistair McGowan  CMO Advisor for Ambulance Services
Gordon McNaughton  CMO Advisor for Accident and Emergency Medicine
Daren Mochrie  Director of Service Delivery, SAS
Simon Paterson-Brown  Hepato-Pancreato-Biliary Surgeon, NHS Lothian
Fiona Ramsay  Director of Finance, NHS Forth Valley
Iain Robertson  CMO Advisor for Interventional Radiology
Jacqui Simpson  Regional Planning, SEAT
Patrick Statham  CMO Advisor for Neurosurgery
Dahrlene Tough  Consultant Paramedic, SAS
William Walker  CMO Advisor for Cardiac Surgery
Justine Westwood  Head of Planning and Performance, NHS 24
Ian Ross  Acting Chief Executive, NHS Lanarkshire
Scottish Government Representation:
Catherine Calderwood  Senior Medical Officer
Elizabeth Porterfield  The Quality Unit : Planning Team
Craig Bell  The Quality Unit : Planning Team
Ian Williamson  Primary Care Division

The group will engage with other stakeholders as appropriate.
ENHANCEMENT OF MAJOR TRAUMA SERVICES IN SCOTLAND

Purpose

1. This paper outlines current major trauma care delivery in NHS Scotland, international and UK comparisons, and the opportunities to achieve a higher quality service with improved patient outcomes in Scotland.

2. This paper proposes that the National Planning Forum should lead a task and finish group to develop a national framework for high quality major trauma services.

Background

3. Trauma can be defined as physical injury caused by events such as road traffic accidents, falls, explosions, shootings or stabbings. ‘Major trauma’ is used to describe multiple, serious injuries that could result in disability or death.

4. Major trauma is the most common cause of death in young people in the UK. Each year in Scotland around 5000 people sustain significant injuries with around 800 being defined as ‘major trauma’ (injury severity score>15)\(^1\).

5. Patients sustaining serious injuries have better outcomes if they are delivered to definitive care quickly. Major trauma patients require specialist care from a multidisciplinary group of professionals, and survival is greatly improved when clinicians can maintain their skills by treating a high volume of trauma patients. However, major trauma patients comprise only 0.2% of the emergency medicine workload\(^2\), resulting in many hospitals and hospital staff unable to maintain optimal skills in major trauma care. A 2010 report using English data has suggested that major trauma patients treated initially in local hospitals are 1.5 - 5 times more likely to die than those treated in a major trauma centre\(^2\).

6. There have been a number of recent English-focused reports that have identified serious failings in trauma care delivery\(^2,3\), with the 2007 NCEPOD report identifying that almost 60% of the patients in the study received a standard of care that was less than good practice. As a result, plans have been implemented within England to improve major trauma services. Although there is less detailed data available for Scotland, it is unlikely that the situation is significantly different to England.

7. The surgical community in Scotland have recognised there is a need to change the way that care of major injuries is managed and delivered in Scotland. A report by the Trauma Working Group of the Royal College of Surgeons of Edinburgh (RCSE) was published on 18 May 2012. This report has examined the evidence for regionalisation of trauma care and its applicability to the Scottish setting.

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1 Scottish Trauma Audit Group (www.stag.scot.nhs.uk)
2 Major Trauma Care in England, National Audit Office, 2010
3 The National Confidential Enquiry into Patient Outcome and Death. Trauma, who cares? National Audit Office, 2007
8. The RCSE’s working group recommends that a coherent, integrated and inclusive national trauma service in Scotland is developed, and that further research takes place to determine the optimal configuration of a trauma system for Scotland (see Annex A for the recommendations and conclusion of the report). This would see enhanced services in a small number of centres to manage the small proportion (0.2%) of the emergency services workload which requires this more specialized type of care and would ensure adequate training opportunities to enable provision of these services as high quality and sustainable.

Current trauma care in Scotland

9. Currently there is no formal infrastructure for major trauma care in Scotland, which can result in inappropriate care pathways leading to poor outcomes. There are 30 hospitals across NHS Scotland with A&E receiving units that accept trauma patients delivered by the Scottish Ambulance Service (SAS) (table 1). However, there is already evidence of some regionalisation of trauma care with local protocols in place in two regions to determine the circumstances in which the SAS should bypass certain A&E units.\(^4\)

10. None of these 30 hospitals meet the requirements for a major trauma centre or even a trauma unit (as defined by the NHS Clinical Advisory Groups Report\(^5\)). Major trauma centres should provide all the major specialist services relevant to the care of major trauma, i.e. general, emergency medicine, vascular, orthopaedic, plastic, spinal, maxillofacial, cardiothoracic and neurological surgery and interventional radiology, along with appropriate supporting services such as critical care. The Royal College of Surgeons cite research advising that such centres should admit a minimum of 250 critically injured patients per year.

11. Aberdeen Royal Infirmary is the only hospital within NHS Scotland with all the required specialities on site. The Royal Infirmary of Edinburgh (RIE) does not currently have neurological services on site, although these are planned to move from the Western General Hospital to RIE in 2015. Ninewells Hospital does not have a cardiothoracic service. Services in Glasgow are fragmented across several hospitals and sites, although some of these will be consolidated at the new Southern General Hospital by around 2015.

12. Scotland has a population of around 5.2 million, and around 800 major trauma patients per year. Distribution of major trauma cases across a large number of hospitals with varying capabilities makes it unlikely that any hospital can accumulate sufficient experience to optimally manage patients with major trauma.

13. The SAS provides pre-hospital care delivery, and is supported by a number of specialist clinical teams, for example Emergency Medical Retrieval Service, Tayside Trauma Team, Medic 1, BASICS doctors and other ad hoc hospital teams. However, despite the two local protocols referred to above, currently pre-hospital trauma care across NHS Scotland is fragmented, and injured patients are generally taken to the

\(^4\) In NHS Lothian, St John’s Hospital can be bypassed in order to transport a patient directly to the Royal Infirmary of Edinburgh. In NHS Tayside, patients with serious injuries can be taken directly to Ninewells Hospital.

nearest hospital with an Emergency Department. This does not take into account either the severity of the injuries or the facilities and staffing of the receiving unit. Triage of patients and tasking of SAS assets is essential to ensure patients are taken to a hospital capable of caring for their injuries.

Table 1: NHS Scotland Hospitals with A&E unit

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Health Board</th>
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<tr>
<td>Ayr Hospital</td>
<td>A&amp;A</td>
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<tr>
<td>Crosshouse Hospital</td>
<td>A&amp;A</td>
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<tr>
<td>Borders General Hospital</td>
<td>Borders</td>
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<tr>
<td>Dumfries &amp; Galloway Royal Infirmary</td>
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<td>Queen Margaret Hospital</td>
<td>Fife</td>
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<tr>
<td>Victoria Hospital</td>
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<td>Forth Valley Royal Hospital</td>
<td>FV</td>
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<tr>
<td>Aberdeen Royal Infirmary</td>
<td>Grampian</td>
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<tr>
<td>Dr Gray’s Hospital</td>
<td>Grampian</td>
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<tr>
<td>Royal Aberdeen Children’s Hospital</td>
<td>Grampian</td>
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<tr>
<td>Glasgow Royal Infirmary</td>
<td>GG&amp;C</td>
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<tr>
<td>Inverclyde Royal Hospital</td>
<td>GG&amp;C</td>
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<tr>
<td>Royal Alexandra Hospital</td>
<td>GG&amp;C</td>
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<tr>
<td>Royal Hospital for Sick Children (Glasgow)</td>
<td>GG&amp;C</td>
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<tr>
<td>Southern General Hospital</td>
<td>GG&amp;C</td>
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<tr>
<td>Stobhill Hospital</td>
<td>GG&amp;C</td>
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<tr>
<td>Victoria Infirmary</td>
<td>GG&amp;C</td>
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<tr>
<td>Western Infirmary / Gartnavel General</td>
<td>GG&amp;C</td>
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<tr>
<td>Raigmore Hospital</td>
<td>Highland</td>
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<tr>
<td>Hairmyres Hospital</td>
<td>Lanarkshire</td>
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<tr>
<td>Monklands District General Hospital</td>
<td>Lanarkshire</td>
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<tr>
<td>Wishaw General Hospital</td>
<td>Lanarkshire</td>
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<tr>
<td>Royal Hospital for Sick Children (Edinburgh)</td>
<td>Lothian</td>
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<tr>
<td>Royal Infirmary of Edinburgh</td>
<td>Lothian</td>
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<tr>
<td>St John's Hospital</td>
<td>Lothian</td>
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<tr>
<td>Gilbert Bain Hospital</td>
<td>Shetland</td>
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<tr>
<td>Ninewells Hospital</td>
<td>Tayside</td>
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<tr>
<td>Perth Royal Infirmary</td>
<td>Tayside</td>
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<tr>
<td>Western Isles Hospital</td>
<td>Western Isles</td>
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</tbody>
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Adapted from Audit Scotland report August 2010 – note original list included Stirling Royal Infirmary rather than Forth Valley Royal Hospital.

14. There are only limited data regarding mortality from major trauma in Scotland, although the return of STAG to trauma audit in 2011 is beginning to provide more information, the situation in Scotland is likely to be similar to that in England as described by the 2010 NAO report. This report highlighted significant deficiencies in the delivery of major trauma care and that survival rates for major trauma vary significantly between hospitals reflecting variations in the quality of care. The evidence suggests that major trauma patients managed initially in local hospitals are 1.5 – 5 times more likely to die than patients transported directly to trauma centres.

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International and UK comparisons

15. In response to the NAO Audit on Major Trauma\(^2\), the Department of Health gave a number of commitments to the Public Accounts Committee on how management of trauma care in England would develop. This built on work established by Professor Keith Willett, the first National Clinical Director for Trauma Care, and included development and implementation of trauma networks by SHAs, and all hospitals participating in trauma networks to submit data to TARN (Trauma Audit and Research Network). The London Trauma Network has been in operation since 2010 and there has been significant improvement in patient outcomes since the system went live.

16. The report from the NHS Clinical Advisory Groups (CAG)\(^5\) offers advice to SHAs in England to assist local planning for the main elements of the Major Trauma pathway (pre-hospital care, acute trauma care and surgery, ongoing care and reconstruction, rehabilitation). However, this advice will also have applicability to Scotland.

17. The Department of Health recently announced that a network of 22 new centres specialising in treating patients who suffer from major trauma opened across England on 2 April 2012 (see Annex B for full press release and details of centres). Each Major Trauma Centre will be supported by a network of local trauma units, responsible for treating less serious injuries such as fractures and minor head injuries.

18. Internationally, the establishment of Trauma Systems has been founded on Trauma Centres, which specialise in, and are designated for, the treatment of the severely injured. Trauma Centres see such patients with sufficient frequency to gain expertise in their management. There is now a wealth of evidence that demonstrates this model improves trauma outcomes – severely injured patients are 15-20% less likely to die if admitted to a Trauma Centre than if admitted to other hospitals\(^7\).

19. There are a number of international examples of Trauma Systems, for example the Victorian State Trauma System (VSTS), which have enhanced trauma patient management. Victoria shares many of the geographical challenges that Scotland faces. Victoria has a highly centralised population, with around 75% of people living in the state capital. However, despite Victoria being Australia’s most densely populated state, it has a similar population to Scotland (5.6 million vs 5.2 million) in an area three times the size of Scotland.

20. The VSTS was established in 2000 and has resulted in 80% of all major trauma patients being treated at a major trauma centre, a reduction in mortality rates with fewer than expected deaths according to international benchmarks, positive trends in preventable deaths, and reduced length of stay in hospitals.

21. There are no international standards for the definition of major trauma, however the criteria used by the VSTS and the Lake Superior Regional Trauma Advisory Council are detailed at Annex C, and the Department of Health outlined that major trauma is a serious injury and generally includes such injuries as:

- Traumatic injury requiring amputation of a limb
- Severe knife and gunshot wounds
- Major head injury
- Multiple injuries to different parts of the body e.g. chest and abdominal injury with a fractured pelvis
- Spinal injury
- Severe burns

Opportunities for development

22. There is currently no clinical governance framework, no policy development or implementation assurance for major trauma care in NHS Scotland. The European Working Time Directive and New Deal regulations have had a significant effect on the number of hours trainees have available for rotas and it will become more difficult to maintain provision of major trauma services at multiple sites from junior staff present at hospital with on-call consultant cover.

23. Major trauma occurs at low frequency but with high acuity and is inherently unpredictable. It can commonly exceed the capacity of local healthcare services, and there is currently no supporting infrastructure or consistent use of appropriate triage and tasking tools and protocols.

24. There is a case for change to implement nationally planned service delivery enhancements in order to provide a higher quality service for patients, and improve patient outcomes for those that experience major trauma (~800 patients a year). It is intended that this would involve enhancing current centres and introducing formal major trauma care pathways. It would not involve closure of existing A&E units. These enhancements would need to be carried out in conjunction with the wider national strategic quality improvement work on unscheduled care.

25. Additionally, although cost is not a driving factor it is likely that the introduction of agreed pathways across NHS Scotland will result in a more cost effective and higher quality major trauma service.

Planning and Quality Division
June 2012
Annex A to NPF paper – Summary and Recommendations of the Report by the Trauma Working Group of the Royal College of Surgeons of Edinburgh and the Royal College of Physicians and Surgeons of Glasgow

Summary and Recommendations

1. There is good evidence that regionalised trauma care improves mortality and disability from major trauma, and is cost-effective.

The working group recommends the development of a coherent, integrated and inclusive national trauma service in Scotland.

2. The reorganisation of trauma services in England is proceeding apace. NHS England has created a useful framework for the delivery of trauma care in the UK setting.

The working group believes that much of the service delivery framework which has been developed in England is transferable to Scotland.

3. There is only limited data regarding survival from major trauma in Scotland. There are no comparisons with populations served by a trauma system.

The working group recommends further study of mortality from trauma in Scotland.

4. The temporal distribution of trauma deaths in Scotland may differ from other regions.

The working group believes that the temporal distribution of trauma deaths should not be used to argue against improvements in trauma care, as mortality is not the only indicator of effective trauma care.

5. There are no published data on outcomes other than mortality after major trauma in Scotland.

The working group recommends further study of functional outcomes from trauma in Scotland.

6. There is insufficient information on variations in outcomes from trauma care in different hospitals.

The working group recommends further study of variations in outcomes from trauma in Scotland.

7. The resumption of trauma audit, by the Scottish Trauma Audit Group, is a welcome development, but requires extension.

The working group recommends the continuous collection of process and outcome data, as part of a comprehensive performance improvement strategy, to facilitate the evaluation of trauma care in Scotland.

8. Pre-hospital trauma care is fragmented.

The working group recommends the integration of all organisations providing pre-hospital care, to facilitate rapid retrieval from the scene of the accident and – if necessary – secondary transfer.

9. There is no triage to ensure that patients are taken to a hospital capable of dealing with their injuries.

The working group recommends the introduction of pre-hospital triage to ensure that patients are taken to appropriately staffed and resourced trauma centres, which form part of an inclusive trauma system.
10. There is evidence, from Scotland, that travel times – within reason – are less important than once thought. Direct transfer to a centre capable of providing definitive trauma care is associated with better outcomes than care in a local hospital.

The working group recommends that the delivery of pre-hospital care should focus on rapid transfer to definitive care.

11. The volume of major trauma in Scotland, and the number of receiving hospitals, indicates that the institutional experiences of any of the centres falls short of recognised thresholds for a service capable of improving survival from major trauma.

The working group recommends that the care of trauma patients, and particularly patients with major trauma, should be concentrated in designated centres.

12. The population size and incidence of major trauma in Scotland indicate the need for one, or at the most two, major trauma centres.

13. There are no hospitals in Scotland which fulfil the criteria for an English major trauma centre or American level 1 trauma centre.

The working group recommends further study to determine the optimal configuration of a trauma system for Scotland, including the number of major trauma centres, trauma units and changes to prehospital services.

14. There is evidence that consultants are not involved at a sufficiently early stage.

The working group recommends that trauma care should be delivered by consultants, while instructing doctors in training.

15. The provision of trauma services at multiple sites has been rendered progressively more difficult as a consequence of the restrictions imposed by the European Working Time Regulations and New Deal, as well as changes in trainee numbers and training programmes.

The need to comply with the European Working Time Regulations and changes to the structure of postgraduate training programmes will require consolidation of emergency services to a smaller group of centres.

16. Specialised trauma rehabilitation services are an essential component of a trauma system to enable injured people to return to achieve their optimal functional potential. The current provision of specialist and general rehabilitation facilities is insufficient.

Existing rehabilitation services require reorganisation and enhancement to ensure that complex and multi-faceted needs are met and delivered in a seamless fashion in all stages of the patient’s journey from trauma centre to the community.

Conclusions

The working group believes that the benefits of specialist, regionalised trauma care, which have been realised elsewhere – including reduced mortality and improved functional outcomes – could also be attained in Scotland.

Although the precise configuration of a trauma system for Scotland requires further research, the working group believes that the general principles of a holistic, inclusive, tiered system are equally applicable to Scotland as elsewhere. Such a service should make use of existing facilities wherever possible, but may require expansion of the infrastructure.
New major trauma centres to save up to 600 lives every year
April 2, 2012

A network of 22 new centres specialising in treating patients who suffer from major trauma will open across England, Health Secretary Andrew Lansley today announced.

These specialist trauma centres will provide round-the-clock life saving treatment for seriously injured patients such as those who have head injuries, stab wounds or have been in a car accident.

Working alongside local hospital trauma units, 22 Major Trauma Centres will operate 24 hours a day, seven days a week and be staffed by consultant-led specialist teams with access to the best state of the art diagnostic and treatment facilities.

Previously, patients who suffered major trauma were simply taken to the nearest hospital, regardless of whether it had the skills, facilities or equipment to deal with such serious injuries. This often meant patients could end up being transferred, causing delays in people receiving the right treatment.

The new network means ambulances will take seriously injured patients directly to a specialist centre where they will be assessed immediately and treated by a full specialist trauma team. Patients who have suffered a severe injury often need complex reconstructive surgery and care from many professionals, and so the trauma team includes orthopaedics, neurosurgeons, radiologists, physiotherapists, occupational therapists and speech therapists.

Secretary of State for Health Andrew Lansley said:

“For far too long, people have needlessly died from major trauma injuries because some local hospitals were not equipped with the right facilities or specialist teams to treat patients with life-threatening injuries quickly.

“I have always said that patients should be at the heart of the NHS and that services should be arranged around their needs, not how hospitals are organised. Seriously injured patients need to be assessed and treated quickly. With 22 new trauma centres now opening across England staffed with a full specialist trauma team, we hope to save up to 600 lives a year.”

Many patients need a personalised rehabilitation programme taking many months to help them return to an active life. From April, every major trauma patient will be given a rehabilitation prescription which describes their recovery plan in detail.

Studies have shown that major trauma centres with dedicated personnel and specialist equipment save more lives and reduce the risk of serious disability. For example, a patient who has suffered a serious head injury can receive a CT scan within 30 minutes, allowing doctors to respond quickly to reduce the risk of brain damage.

Professor Keith Willett, National Clinical Director for Trauma Care at the Department of Health, said:

“Thanks to the advances in medicine and technology, patients are now able to survive horrific injuries that previously would have killed them. This is down to the very advanced medical skills that are available in a range of specialties in certain major centres in the NHS.
This expertise must be available for all patients, regardless of where they have been injured. At the accident scene the exact injuries are rarely known.

“That is why we have introduced the Major Trauma networks, which should save up to 600 lives a year. This new system is a great example of the difference that can be made to patients’ lives by having all the expertise, experience and equipment in one place.”

Each Major Trauma Centre will be supported by a network of local trauma units, responsible for treating less serious injuries such as fractures and minor head injuries.

Note to editors

1. The 22 Major Trauma Centres are:
   - Addenbrooke’s Hospital, Cambridge (Cambridge University Hospitals NHS Foundation Trust)
   - Frenchay and Southmead Hospitals, Bristol (North Bristol NHS Trust)
   - James Cook University Hospital, Middlesbrough (South Tees Hospitals NHS Foundation Trust)
   - John Radcliffe Hospital, Oxford (Oxford Radcliffe University Hospital NHS Trust)
   - Leeds General Infirmary, Leeds (The Leeds Teaching Hospitals NHS Trust)
   - Queen’s Medical Centre, Nottingham (Nottingham University Hospital NHS Trust)
   - Royal Victoria Infirmary, Newcastle (The Newcastle upon Tyne Hospitals NHS Foundation Trust)
   - Southampton General Hospital, Southampton (University Hospital Southampton NHS Foundation Trust)
   - Derriford Hospital, Plymouth (Plymouth Hospitals NHS Trust)
   - Hull Royal Infirmary (Hull and East Yorkshire NHS Trust)
   - Northern General Hospital, Sheffield (Sheffield Teaching Hospitals NHS Foundation Trust)
   - Queen Elizabeth Hospital, Birmingham (University Hospitals Birmingham NHS Trust)
   - Royal Preston Hospital, Preston (Lancashire Teaching Hospitals NHS Foundation Trust)
   - Royal Sussex County Hospital, Brighton (Brighton and Sussex University Hospitals NHS Trust)
   - University Hospital Coventry (University Hospitals Coventry Warwickshire NHS Trust)
   - University Hospital of North Staffordshire NHS Trust Stoke on Trent
   - Alder Hey Children’s Hospital NHS Foundation Trust, Liverpool
   - Birmingham Children’s Hospital NHS Foundation Trust
   - Royal Manchester Children’s Hospital, Manchester (Central Manchester University Hospitals NHS Foundation Trust)
   - Sheffield Children’s Hospital, Sheffield (Sheffield Children’s NHS Foundation Trust)
   - Manchester collaborative Major Trauma Centre
     a. Salford Royal NHS Trust
     b. Manchester Royal Infirmary
     c. University Hospital South Manchester
   - Liverpool Collaborative Major Trauma Centre
     a. Aintree University Hospital
     b. Walton Centre
     c. Royal Liverpool University Hospital
2. Major trauma is serious injury and generally includes such injuries as:
   - traumatic injury requiring amputation of a limb
   - severe knife and gunshot wounds
   - major head injury
   - multiple injuries to different parts of the body e.g. chest and abdominal injury with a fractured pelvis
   - spinal injury
   - severe burns.

3. There are approximately 20,000 major trauma cases in England every year. It has been estimated by the National Audit Office that between 450 and 600 lives could be saved per year across England.

4. A trauma system is a model of care for treating the most seriously injured patients, such as those with multiple injuries, including head injuries, life-threatening wounds and multiple fractures. It relies on a “hub” – a major trauma centre – working with a series of local trauma units. The major trauma centres operate 24 hours a day, seven days a week and are staffed by consultant-led specialist teams with access to the best diagnostic and treatment facilities.

5. Ambulance staff use a triage tool to assess patients to ensure those with the most severe injuries, classed as major trauma, are taken to a major trauma centre for urgent treatment. This may involve bypassing their local hospital so they can immediately receive specialist care with access to CT scans and innovative technology. Other patients will be taken to their local trauma unit for stabilisation before rapid transfer to the MTC for definitive treatment. It involves the ambulance service and helicopter emergency medical service working with the major trauma network to ensure the most urgent patients are sent to the most appropriate place.

6. For more information, please contact the Department of Health press office at 020 7210 5221 or visit the NHS Choices website.
Annex C to NPF paper – International definitions of major trauma

Victorian State Trauma System

As no international standard exists for the definition of major trauma, the VSTS has identified particular criteria as comprising major trauma. The criteria were developed by the Victorian State Trauma Registry (VSTR) as broad based inclusion criteria to ensure that data collection captures all major trauma patients in Victoria.

1. **Inclusion criteria**
   1. Death after injury
   2. Admission to an intensive care unit or high dependency area for more than 24 hours and mechanically ventilated after admission.
   3. Significant injury to two or more Injury Severity Score (ISS) body regions or an ISS greater than 15.
   4. Urgent surgery for intracranial, intrathoracic, or intra-abdominal injury, or for fixation of pelvic or spinal fractures.
   5. Electrical injuries, drowning and asphyxia if admitted to an intensive care unit and receiving mechanical ventilation for longer than 24 hours.
   6. All patients with injury as principal diagnosis whose length of stay is three days or more – *unless they meet the exclusion criteria.*
   7. All patients with injury as principle diagnosis transferred or received from another hospital for further emergency care or admitted to a high dependency area - *unless they meet the exclusion criteria.*

The VSTR records details of trauma patients whose principle diagnosis is injury, irrespective of age, and who meet any of the above inclusion criteria.

2. **Exclusion criteria**
   1. Isolated fractured neck of femur.
   2. Isolated upper limb joint dislocation, shoulder girdle dislocation (unless associated with vascular compromise) and toe/foot/knee joint dislocation – *unless meets inclusion criteria 1, 2 or 4.*
   3. Isolated closed limb fractures only (for example, fractured femur or Colles fracture) - *unless meets inclusion criteria 1, 2 or 4.*
   4. Isolated injuries distal to the wrist and ankle only (for example, finger amputations) - *unless meets inclusion criteria 1, 2 or 4.*
   5. Soft tissue injuries only (for example, tendon and nerve injury and uncomplicated skin injuries) *unless meets inclusion criteria 1, 2 or 4.*
   6. Burns to less than 10 per cent of the body - *unless meets inclusion criteria 1, 2 or 4.*
   7. Isolated eyeball injury.
GUIDELINES FOR TRAUMA DEFINITION

Definition of major Trauma

Activate local trauma plan

1. Unresponsive to voice commands
2. Unstable blood pressure:
   a. Adult: Systolic Blood Pressure < 90 mmHg
   b. Pediatric: Infant < 2 years < 65 mmHg
      Child 2 – 5 years < 70 mmHg
      Child 6 – 12 years < 80 mmHg
3. Respiratory rate:
   a. Adult: Less than 10 or greater than 30 breaths per minute
   b. Pediatrics under 12: Less than 10 and greater than 60 breaths per minute
   c. Ineffective breathing, grunting or stridor in a child
4. Penetrating injury to head, neck, torso or proximal extremity
5. Flail chest
6. Trauma with concurrent burns greater than 15% Body Surface Area
7. Distended, rigid abdomen with signs of shock
8. Two or more proximal long bone fractures
9. Depressed or open skull fracture
10. Unstable pelvic fracture
11. New onset paralysis
12. Amputation proximal to wrist or ankle

Indicators of possible Major Trauma

Have high suspicion. Consider trauma plan activation.

1. Ejection from automobile during crash
2. Death of another occupant of same vehicle in a crash
3. Extrication time in excess of 20 minutes
4. Falls from higher than 20 feet. Use 10 feet for a child
5. Victim of a roll over motor vehicle crash
6. Victim of a high speed vehicle crash; >40mph, >20mph for a child
7. Major auto deformity, intrusion of damage into passenger compartment
8. Auto vs. pedestrian or bicycle
9. Pedestrian thrown or run over
10. Any motorcycle crash
11. Trauma patient with extremes of age <5 or >55
12. Injured patient with underlying lung or cardiac disease
13. Injured patient who is pregnant
14. Injured patient who is immunosuppressed
15. Injured patient with bleeding disorder or who is on anticoagulation medication