Health Scrutiny Committee – 3 October 2011

Improving Trauma Care within the West Midlands

Recommendations

1. To receive information about the formation of a business case to improve trauma care within the West Midlands.

2. To give a view on what consultation and/or engagement about this change should take place.

3. To agree arrangements for further scrutiny of this matter.

Report of Staffordshire Cluster of Primary Care Trusts

Summary

What is the Scrutiny Committee being asked to do and why?

4. A business case to improve trauma care within the West Midlands is being formulated. Commissioners wish to discuss the proposals with their local health overview and scrutiny committees now and seek their opinion on what consultation and engagement about this change should take place, prior to coming back at a later date to present the findings of the Integrated Impact Assessment, the option appraisal and the preferred option for future trauma care provision. The Committee may wish to consider hearing from other affected stakeholders at this later date.

5. Alongside the information in the report provided here, a regular trauma newsletter (appended) has been introduced to keep the Committee and other stakeholders informed.

Report

6. Background

Since 1988, a number of studies have identified deficiencies in the care provided to severely injured patients in England.\(^1\)\(^2\) There has, however, since been little progress in addressing these deficiencies. In 2007, the National Confidential Enquiry into Patient Outcomes and Death (NCEPOD)\(^3\) identified the following problems with the current major trauma care in England:

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Challenges for major trauma care in England

- Almost 60% of the patients receive a standard of care that is less than good practice, since they are in the main cared for by organisations which do not have all the required specialties. Therefore, delays are incurred when patients require onward transfer to a more specialist tertiary unit, particularly those patients who need neurosurgical services.

- Of all major trauma cases, currently 27% of patients die as a result of their traumatic injuries.

- As major trauma represents only 0.1% of total Accident & Emergency (A&E) activity, the average Hospital sees less than two patients per week with larger emergency departments seeing on average one per day.

- The annual cost to the NHS to treat major trauma patients is estimated to be £300-£400 million.

- As a result of the mortality and morbidity associated with major trauma patients, this has been calculated to represent a lost economic output of £3.3 – £3.7 billion per year.

- Deficiencies in both organisational and clinical aspects of care occur frequently.

- There are difficulties in identifying those patients with an Injury Severity Score (ISS) $>$15 at the scene or upon admission to the local A&E. \(^4\)

- With large costs involved in both the provision of care and resources for the management of these patients, the current method of identifying the demand for the management of these patients through the Trauma Audit and Research Network (TARN) is not compulsory.

- The organisation of pre-hospital care, the trauma team response, seniority of staff involvement and immediate in-hospital care was found to be deficient in many cases.

- Lack of appreciation of severity of illness, of urgency of clinical scenario and incorrect clinical decision making were apparent.

- Many of these clinical issues were related to the lack of seniority and experience of the staff involved in the immediate management of these patients.

- It was clear that the provision of suitably experienced staff during evenings and nights was much lower than at other times and as such the management of trauma, which very often presents at night, is a major concern.

In responding to these challenges, there is wide clinical consensus that trauma service provision should be configured into regional trauma systems.

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\(^4\) Major trauma is defined using a scoring system known as the Injury Severity Score (ISS). This uses the Abbreviated Injury Scale (AIS) to score the severity of an injury of each body region. A score of between 1 and 5 is given to each of the six body regions. To derive the ISS, the three highest scores only are taken, squared and then added. If the ISS is greater than 15 it delineates major trauma; if the ISS is below 15 the trauma is less severe. This scoring is used by clinicians to retrospectively identify major trauma cases.
7. Anticipated Benefits of a Major Trauma Care System

Evidence demonstrates that care based on a network model incorporating a range of specialist units; a major trauma centre, a number of trauma units, pre-hospital care and a range of rehabilitation providers is seen to:

- reduce mortality and disability;
- improve communication;
- improve equality of access; and
- provide more effective educational programmes for clinicians and staff.  

8. Principles of change

Co-ordinated Care through Regional Trauma Networks

The NHS Clinical Advisory Group provides recommendations on the regionalisation of trauma care. It states that regionalising trauma services involves developing Inclusive Trauma Systems through Trauma Networks, which include all providers of trauma care, from pre-hospital care through to rehabilitation. Restructuring into regionally organised Trauma Networks aims to deliver patients rapidly and safely to a specialist hospital; capable of delivering definitive care, as early as possible. This will secure improvements in survival, better outcomes and care for patients suffering life-threatening and complex injuries. For example, findings from US studies where trauma services have been regionalised have indicated a 25% reduction in mortality. It is clear from available evidence that a whole system approach to major trauma management is most effective, where acute hospitals, ambulance services and rehabilitation services work collaboratively; for example, the establishment of a trauma system in Quebec resulted in mortality dropping from 52 percent to 19 percent.

It is already recognised that local developments to improve the co-ordination of major trauma care have already resulted in an improvement in outcomes. For example, Coventry and Warwickshire moved towards a new network based trauma care system in 2006 and have witnessed incremental improvements despite not yet having met all the Major Trauma Centre (MTC) criteria. Local stakeholders have commented that benefits have included approximately eight additional survivors per year and TARN data shows an improvement in the rate of survival for major trauma patients between 2007/08 and 2009/10.

Rapid access to definitive treatment

Whilst there is no definitive evidence to set a minimum standard travel time for major trauma patients to reach an appropriate setting (i.e. an MTC), a standard of 45 minutes has

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5 The Royal College of Surgeons of England (2007): ‘Provision of Trauma Care Policy; Briefing’
8 F T McDermott and S M Cordner; The Medical Journal of Australia (2008): ‘Victoria’s Trauma Care System: National Implications For Quality Improvement’
9 Regional Networks for Major Trauma NHS Clinical Advisory Groups Report
10 MacKenzie E, Rivara F, Jurkovich G, Nathens A, Frey K, Egleston B, Scharfstein D. (2006) N Engl J Med ‘A National Evaluation of the Effect of Trauma-Center Care on Mortality’. p.354:365-378. This study compared mortality outcomes for patients treated in hospitals with a level 1 trauma centre (the US equivalent of a MTC) with outcomes for patients treated in hospitals without a trauma centre. The study found (after case mix adjustment) significantly lower mortality rates both within hospital and at one year. They found that the risk of death is significantly lower when care is provided in a level 1 trauma centre than when provided in non-trauma centres (7.6 percent compared to 9.5 percent, indicating reduction in mortality of 25 percent).
12 In 2009/10 UHCW had 2.9 additional survivors out of every 100 patients, compared to 2 patients in 2007/08.
been derived through discussions by clinical experts in the Major Trauma National Working Groups, and is therefore a recommendation by the Clinical Advisory Group. However, it is widely acknowledged that the time from injury to definitive major trauma care is the primary determinant of the clinical outcome for major trauma patients, rather than the time to the nearest hospital or A&E. For example, a recent UK study identified that patients treated initially at a local hospital and subsequently transferred to a more specialist centre had an overall 50% increase in mortality than if they had been initially transported to the nearest specialist centre. Therefore, the need to deliver the patient to a unit able to provide their definitive care in a timely fashion is a substantial driver of change to the current trauma pathway.

Specialist care for Major Trauma Patients

Within the UK, in 2007, the Royal College of Surgeons of England presented evidence which showed improved outcomes for major trauma patients which were taken to a hospital with the appropriate range of medical specialists and access to specialist resources and equipment to treat multiple injuries. It is also reported that positive outcomes have been realised at the Royal London Hospital since its implementation of a multi-specialty major trauma service, where TARN data indicated a 28% reduction in mortality over a four year period at the hospital for the most severely injured patients, compared to the national average.

At present, the average acute hospital is not likely to be called upon to treat more than one severely injured patient each week. The relative infrequency with which major trauma occurs means that it can be difficult for acute hospital staff to gain experience and skill in this area. NCEPOD also identified that due to the low volumes of major trauma cases most hospitals are unable to provide the entire infrastructure required to manage these patients. This builds on earlier recommendations from the British Orthopaedic Association in 1989 which recommended that services should be concentrated at fewer centres; there were too many small units and too few Consultants with a special interest in trauma care.

Whilst there is agreement that improved outcomes for patients are seen where there is critical mass of cases, more recently evidence has emerged indicating that the relationship between volumes and outcomes may not be as important as originally envisaged. It is apparent that there is no firm collective consensus about the minimum volume of major trauma cases which should be undertaken to maintain skills and experience and maximise improved patient outcomes.

Evidence on the impact of volume on outcomes is complex; decision makers must consider caseload, facilities and skills; all of which are key to patient safety. Better Care would suggest that decisions about the location of Major Trauma Centres should be based on

14 Regional Networks for Major Trauma NHS Clinical Advisory Groups Report
17 The Royal College of Surgeons of England (2007): ‘Provision of Trauma Care Policy: Briefing’
18 Based on outcome data from the Trauma Audit and Research Network
22 Better Care for the Severely Injured July 2000, a Joint Report from the Royal College of Surgeons of England and the British Orthopaedic Association
standards and modelled need, and the culture of a ‘trauma network’ rather than simply on high volume. It is also reported that TARN audit data also fails to demonstrate a significant correlation of high volumes and outcomes. The achievement of audited standards of trauma care with satisfactory outcomes should determine a hospital’s future reception of severe injuries rather than just its size or apparent catchment population.

Paediatrics

It is recognised that to achieve the best survival rates, concentrating expertise and experience is no less important in major trauma in children than it is for adults, and indeed the low numbers of injured children increases the risk of poor outcomes due to occasional practice. The Clinical Advisory Group report that there is no evidence to suggest that children following the high case-volume adult major trauma pathway with paediatric expertise on-site do less well than a low case-volume route to a children only hospital. The system of a network delivery of care to injured children should improve not only the outcomes of those severely injured children but also those with lesser injury.

9. Model of Care

Current model of care

The current model of trauma care in the West Midlands is similar to that found in all areas of England, with the exception of NHS London which has already implemented a trauma system. At present patients with major trauma are generally taken directly to their nearest A&E department.

There are currently 18 hospitals in the West Midlands that provide services for adult major trauma patients, with Birmingham Children’s Hospital providing care for children with major trauma injuries. These hospitals are:

<table>
<thead>
<tr>
<th>West Midlands hospitals with A&amp;E providing major trauma care currently</th>
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<tr>
<td>- Alexandra Hospital, Redditch</td>
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<tr>
<td>- Birmingham Children’s Hospital</td>
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<td>- City Hospital, Birmingham</td>
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<td>- Good Hope Hospital, Birmingham</td>
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<td>- Heartlands Hospital, Birmingham</td>
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<td>- Hereford County Hospital</td>
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<td>- Manor Hospital, Walsall</td>
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<td>- New Cross Hospital, Wolverhampton</td>
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<td>- Queen’s Hospital, Burton Upon Trent</td>
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<td>- Royal Shrewsbury Hospital</td>
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<td>- Russell’s Hall Hospital, Dudley</td>
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<td>- Sandwell General Hospital</td>
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<td>- Solihull Hospital</td>
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<td>- Stafford Hospital</td>
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<td>- The Princess Royal Hospital, Telford</td>
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<td>- University Hospital Birmingham</td>
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<td>- University Hospital Coventry</td>
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<td>- University Hospital of North Staffordshire</td>
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<td>- Worcestershire Royal Hospital</td>
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It should be noted that within the Coventry & Warwickshire health economy, the acute providers (George Eliot Hospital and South Warwickshire Hospital) are already working as an informal network, with major trauma patients bypassing local acute hospitals and going direct to a Major Acute Hospital at University Hospital of Coventry and Warwickshire.


24 Management of Children with Major Trauma (February 2011) NHS Clinical Advisory Group Report
10. A West Midlands Trauma Care System

The West Midlands Trauma System will provide adult and paediatric trauma care for the population of the West Midlands, in line with the major trauma care pathway, outlined below.

Figure 1: Patient Pathway

As the evidence presented above has demonstrated, the complexity of trauma injuries requires that they must only be managed in a major acute emergency hospital with the full complement of supporting specialties. A Trauma Care System therefore consists of one or more networks which have a single major acute emergency hospital (known as a Major Trauma Centre) containing all of the required specialist departments on site. Other acute emergency hospitals (known as Trauma Units) will be supported by the MTC hospital to optimise some patients and support patients in their ongoing acute care following initial treatment at the MTC. Some hospitals that are not designated as a trauma unit may have a very limited role to play in the management of trauma care. The network comes together to deliver a safe, high quality and accessible trauma system to maximise outcomes for patients.

An overview of the different components of a Major Trauma Care system is set out below.

Figure 2: What a Major Trauma System would look like, including a full range of specialists, services and equipment 24/7.
The four options under consideration include a three, two or one Network approach to trauma care across the West Midlands.

The eligible MTCs within the option considerations are:
- University Hospitals Birmingham NHS Foundation Trust (UHB);
- University Hospital of North Staffordshire NHS Trust (UHNS);
- University Hospitals Coventry and Warwickshire NHS Trust (UHCW); and
- (Paediatric MTC) Birmingham Children’s Hospital NHSFT (BCH).

**Paediatric care**

Birmingham Children’s Hospital NHSFT (BCH) will be the centre for the management of major paediatric trauma in the West Midlands; as such it will have a major role to play in the co-ordination of paediatric trauma care across the region.

The principles and standards espoused by both the national and regional trauma network documents apply equally to children and adults. Accordingly there has been active collaboration between adult and paediatric specialists in the West Midlands Trauma Steering Group to define a care pathway for severely injured children which will meet these standards effectively. It is obvious from work undertaken that the effect of the 45 minute isochrones around BCH will necessitate significant input to the overall clinical management of these children by the more adult-based services in either TUs or MTCs depending on the exact geography of the precipitating incident.

Thus the safe and effective care of severely injured children is inextricably linked to the process of designation of both TUs and MTCs in the West Midlands and must be understood as such in both the planning and evaluation of major trauma networks as part of this regional process.

**11. The reconfiguration options**

A model of care is therefore proposed which is based on establishing one, two or three trauma networks across the region. Designating and implementing these Trauma Networks will improve the care and outcomes of major trauma patients as there will be defined protocols for ambulance staff to triage and transfer patients to the most appropriate hospital, in addition to increased co-ordination and communication between hospitals. The adult and paediatric trauma networks will work together to share learning and ensure consistency across a regional trauma care system.

As stated above, each network will have an adult MTC, a multi-specialty hospital, on a single site, optimised for the provision of major trauma care with consultant-led care. It will also provide all the major specialist services relevant to the care of major trauma, including neurosurgery, cardiothoracic and rehabilitation services. Across all of the options being considered, a Paediatric MTC will also be designated at Birmingham Children’s Hospital NHS Foundation Trust.

The work undertaken by NHS West Midlands and the West Midlands Specialised Commissioning Team has identified four options as set out in 1.3 below.
12. West Midlands Major Trauma Programme

In the summer of 2010, West Midlands Primary Care Trusts (PCTs) requested the West Midlands Specialised Commissioning Team (WMSCT) to undertake a review and a financial appraisal of the options for Major Trauma Centre configuration in the West Midlands recommended by the Strategic Health Authority (SHA) Investing for Health (IfH) group on Major Trauma. In the autumn of 2010, the WMSCT identified the need for an expanded project to fully assess all the requirements for evaluating the options for trauma care configuration.

Following this, substantial progress has been made in developing proposals for trauma care across the West Midlands, including developing options for a West Midlands Trauma Care System, considering the configuration of Major Trauma Centres, Trauma Units and the role of Trauma triage.

In summary, the agreed principles of the West Midlands Trauma Care System are that:

- The model will promote co-ordinated care through a Trauma Care system (Network), patients will receive rapid access to definitive treatment and key onsite services through co-ordinated pre-hospital, acute care and rehabilitation pathways.
- The model will ensure patients are treated in the appropriate setting for their needs. Patients with severe and life threatening injuries will therefore receive their care in fewer but concentrated and specialist Major Trauma Centres (MTC) in the future.
- The model will promote reduced time to definitive treatment. The model will promote major trauma patients reaching an MTC in the most optimal time based on the national consensus of a 45 minute travel time to trauma care. As far as is logically and geographically possible these patients will travel direct to a MTC unless
they are unstable, are not within 45 minutes, or self present. These cases will first be taken to a TU for optimisation.

- The model will be required to deliver and demonstrate good outcomes and a strong culture of trauma care.
- The MTCs and Network will have the *infrastructure* and *capacity* to deliver the major trauma specification; including all necessary onsite specialties in line with the minimum requirements of the Major Trauma Centre/TU etc specification.
- The Trauma Network will be *resilient* to manage the predicted number of Trauma cases and the network should always have capacity to receive and treat these cases.
- The Trauma Network will be *financially sustainable* (to the regional health economy) and will consider the investment and disinvestment decisions (opportunity costs) necessary to make the gains in patient outcomes predicted by the literature.

To support the commissioners and SHA within the West Midlands to make these decisions, a business case will set out the case for change and an options appraisal of the four options being considered within the region. The business case will build on work undertaken by WMSCT and will complete stage one of the project to develop and implement a West Midlands Trauma Care System. This has included the development of supporting specifications, identification and evaluation of the potential options, evaluation and consideration of the risks and impacts associated with the options and preparation of viable options for service configuration upon which to undertake a formal public consultation exercise, should health overview and scrutiny committees decide that the change is significant and warrants public consultation.

It should be noted that this project and clinical specialty is experiencing rapid and significant emerging intelligence and publications; which is in turn continuously changing and shaping how this project develops and importantly the factors that are being considered. For example, recent findings from London Trauma Office and NHS East of England.

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**Stage One**

Development of a Commissioning Strategy for a West Midlands Trauma System, which has required formal evaluation and pre consultation of the options for configuration; taking into account the wider implications that may occur as a consequence. This has included the development of a specification, presentation of potential options, evaluation and consideration of the risks and impact associated with the options (IIA), pre-consultation on options, and preparation of viable options for service configuration upon which to undertake a formal public consultation exercise (should this be required).

**Stage Two**

Formal consultation of the preferred option with the local health economy to share and seek views on the rational and content for the service change. A process will need to be established for the evaluation of the feedback to the public consultation exercise, and clear criteria for evaluating the feedback, consideration of all issues, and a transparent process for ensuring a robust decision is made that best reflects the overall aims of the service review.

**Stage Three**

The project will then enter the implementation stage of the Trauma System for the West Midlands where the strategic plans identified and set out in stages 1 and 2 will be implemented. This will need to be a collaborative initiative undertaken by the WMSCT, providers and PCT Cluster based commissioners.
Stage Four

As the system is implemented the project will enter a performance management stage, which will manage the implemented Trauma System against agreed performance and expected outcome measures and speed of access. Performance measures will be defined in the specification and agreed through standard NHS contracts with providers, i.e. additional survivors of traumatic injuries.

The key milestones in the project which support each stage above are demonstrated in the table below

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<tr>
<th>Key Milestones and the Decision Making Process</th>
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<tr>
<td>Milestones</td>
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<tr>
<td>PID developed and agreed in reflection of revised scope and milestones.</td>
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<tr>
<td>Model of Care finalised and Implications agreed by Project Board, Steering Group and Clusters</td>
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<tr>
<td>Specification for Integrated Impact Assessment (IIA) and Pre-Consultation</td>
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<tr>
<td>Completion of IIA and plan for Pre consultation</td>
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<tr>
<td>Pre Consultation Phase</td>
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<td>Completion of Evaluation Document</td>
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<tr>
<td>Multi-Cluster Trauma Unit Selection Panel</td>
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<td>Project Board Appraisal of Trauma system options</td>
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<tr>
<td>Appraisal document to Clusters, Steering Group &amp; Stakeholders</td>
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<tr>
<td>SCG preferred option recommendation for consultation</td>
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<td>Stage 1 Gateway Review</td>
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<td>Public Consultation (subject to HOSCs)</td>
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<td>Final Decision by SCG and Four Tests Review by SHA</td>
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<td>Commence Implementation</td>
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14. **Link to Other Overview and Scrutiny Activity** – The project links to the Committee’s activity with regard to services at Mid Staffordshire NHS Foundation Trust, Burton Hospitals NHS Foundation Trust and University Hospital of North Staffordshire NHS Trust.

15. **Equalities and Legal Implications** – The project is intended to improve equity in access for Staffordshire residents.

16. **Resource and Value for Money Implications** – The improvement of care will have resource implications for both commissioners and providers and will be included in the business case.
17. **Risk Implications** – The risk associated implications are that the non delivery of service change will continue with almost 60% of the patients receiving a standard of care that is less than good practice.

18. **Climate Change Implications** – There will be longer ‘blue light’ ambulance journeys and patient families may have to travel longer distances to visit their relatives in a Major Trauma Centre.

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**Appendices/Background papers**

Trauma Care Network News