Sheffield Teaching Hospitals NHS Foundation Trust

PLAN FOR SHEFFIELD ADULT MAJOR TRAUMA CENTRE

1. SCOPE

The scope of this paper is to set out proposals for establishing a full Major Trauma Centre in Sheffield which will serve adults in South Yorkshire, Bassetlaw and Derbyshire County. Sheffield Teaching Hospitals NHS Foundation Trust (STHFT) and Sheffield Children's NHS Foundation Trust (SCFT) will now form two separate Sheffield Major Trauma Centres.

There will be a three major trauma centre (MTC) model in Y&H for adults, with centres in Leeds, Hull, and Sheffield and a two major trauma centre model for children, with centres in Leeds and Sheffield. This is based on the current PICU network footprint as recommended by the National Clinical Advisory Group.

The MTCs will support a network of Trauma Units (TUs) at other acute hospital sites. The Sheffield MTC will support principally Barnsley, Rotherham, Doncaster, Bassetlaw and Chesterfield. The catchment area is defined by a 45 minute land ambulance journey. There is therefore expected to be some cross boundary flow from the East Midlands region to Sheffield.

In April 2012 Sheffield was given preliminary designation as a MTC for Yorkshire and Humber and a phased roll out agreed for Sheffield and Hull, based on the Yorkshire Ambulance Service (YAS) triage tool. Priority one triage cases, the most severe cases, now bypass the Trauma Units and are sent to Sheffield and Hull if within their own catchment areas. From 2nd April 2013 all MTCs including Leeds will be fully open to all bypass cases.

The East Midlands Ambulance Service (EMAS) have worked on a geographical roll out system for the Nottingham MTC. From 1st October 2012 this has included the Chesterfield area. Adult major trauma cases from the north of Chesterfield, where patients would normally have been brought direct to STHFT still occur. However bypass cases will not be brought to the Northern General Hospital until April 2013 when STHFT is open to all bypass cases as EMAS is not operating on the same triage system as YAS.

From April 2013, the Operational Delivery Network (ODN) will be the mechanism through which the Major Trauma pathways are developed and delivered. The responsibility for the commissioning of major trauma will be with both the National Commissioning Board (commissioning of major trauma as a specialised service and complex rehabilitation (level 1 and 2)); and the Clinical Commissioning Groups (commissioning of, trauma unit services, trauma rehabilitation and ambulance services). In Yorkshire and the Humber an arrangement for co-commissioning will be put in place to coordinate the commissioning care across the patient pathway.

'Candidate' major traumas are cases taken to MTC and are assessed as having an injury severity score of over 8. The funding of Major Trauma will be through the tariff only. Payment by Results guidance for 2013/14 sets out revised criteria for best practice tariff (BPT) for major trauma. Achievement of best practice will be demonstrated by nationally validated TARN data.

Service standards for MTCs are defined in the national service specification for major trauma, published in December 2012. It is likely that the national specification will be

refined and that MTCs will not be expected to meet in full by April 2013 but agree a developmental time period for delivery over the next 12 months. STH has undertaken a further gap analysis against the new standards but the previous schedule of priority developments has not changed fundamentally. There is still uncertainty about some aspects of the development including the likely changes in activity flows but best estimates have been reviewed.

2. BACKGROUND

The setting up of Major Trauma Centres follows the publication of the National Audit Office Report on Major Trauma Care in England February 2010 and the recommendations by the National Major Trauma Advisory Group, September 2010. The Department of Health required each Region to reorganise its services for patients who experience major trauma, which is the main cause of mortality and disability in adults under the age of 40. International evidence has demonstrated that major trauma in England could be managed in more effective ways for both adults and children. The development of a network is expected to have a significant impact on lives saved. Where other countries have implemented such systems deaths from trauma have been reduced by 20 per cent and significant improvements made to recovery from injuries, better access to specialist care and rehabilitation, and more effective use of hospital resources.

The definition of major trauma is life threatening or life changing serious physical injury, often multiple, with a severity score of ISS 15+. Nationally this equates to 11,000 cases per year (with a further 23,000 cases at ISS 9-15). Therefore approximately 91% of hospitals will have less than one case per week and 75% less than one case per fortnight which limits the development of expertise.

The Operating Framework and Outcomes Framework 2011/12, requested regional networks for major trauma that evolve care models and pathways based on patient needs, local expertise, geography, facilities and transport options, with ongoing monitoring of performance against professional standards.

3. OBJECTIVES AND BENEFITS

Y&H SHA identified the key network objectives to be: the development of a high quality, safe and effective major trauma system for adults and children with 24/7 access to a major trauma team; making best use of the services we already have; standardising processes and protocols where this improves outcomes; and reducing mortality and reducing morbidity for people sustaining major trauma.

The most recent 2011 SCHARR research estimates that between 5% and 15% more lives could be saved in the UK through the development of MTCs. In Yorkshire and the Humber this equates to 28 to 33 additional lives saved per year. Based on NICE guidance on levels of cost-effectiveness this would mean that the Y&H regional trauma network would be cost effective as long as implementation costs were less than £6 to £7 million per annum.

Length of stay reductions due to more timely transfers, more rapid definitive care and therefore fewer complications are assessed at 4 days per episode with an estimated reduction in the use of resources equivalent to £5 million per annum.

Critical Care costs for commissioners across the network would be expected to reduce by £2 million per annum due to avoiding waits before transfer.

Given that there will be a disproportionate number of younger lives saved, probably the most significant economic benefit is in improved returns to work and active life, increasing economic productivity and reducing benefit payments and social care costs for patients and their families. This benefit has not yet been quantified. As existing tertiary providers the development of an MTC will enable STHFT to provide improved expert clinical services and better outcomes for patients.

Additional benefits (non major trauma) for the MTC and network are given below:

- Additional neurosurgical presence at NGH which will provide improved support within GITU for closed head injuries, and to Osborn for Neuro rehabilitation patients. On site neurosurgical capability will mean severely injured patients with a head injury will not be transferred to the Royal Hallamshire Hospital and will have neurosurgery at the Northern General.

- An expansion in Orthopaedic services provides more capacity for both emergency and elective capacity and an improvement to emergency care pathways.

- Additional Consultants in Emergency Medicine will ensure senior decision makers are available to lead and support accident and emergency workloads that will improve clinical indicators and access times; enhance clinical decision making, in particular leading the resuscitation of the critically ill or injured and provide increased supervision of more junior members of the ED medical team.

- The development of major trauma rehabilitation care in the acute phase focuses on completion of the rehabilitation prescription for all patients with major trauma and the acute pathway. A Consultant in Rehabilitation Medicine and a Rehabilitation and Trauma Allied Health Professional are planned to provide leadership to the wider multi disciplinary team, facilitate delivery of appropriate trauma rehabilitation outcomes, benefit inpatient flow and transfers and maximise the achievement of Best Practice Tariff.

4. SERVICE STANDARDS AND PHASED IMPLEMENTATION

The establishment of the Sheffield Adult MTC is being developed in two phases:

Phase 1: 2012/2013 implemented

- Agreement of all necessary clinical protocols and procedures between Sheffield MTC, TUs and the ambulance services (YAS and EMAS).

- Setting up of Major Trauma clinical governance network for South Yorkshire and Bassetlaw with regular morbidity and mortality meetings.

- Regular education sessions for the network.

- Start to implement new service standards for existing patient flows including introduction of Rehabilitation Advice Note.

- Trauma team and multidisciplinary working.

- Live list of major trauma patients to track and coordinate care.

- Improved TARN data collection.

- Secondary transfer arrangements confirmed: TUs to MTC within 48 hours.

- Repatriation arrangements confirmed: MTC to TUs within 48 hours.

- Additional staffing established from Best Practice Tariff income to cope with new systems and interim designated minimum standards:

    - Additional neurosurgeon based on the NGH site to meet MTC standards

    - TARN administrator to ensure prompt collection and recording of data

    - Two Trauma Nurse Coordinators

- Resources for imaging including CT scanning to be provided within the required timescales by extending the core hours of the second scanner.

- Additional Orthopaedic surgeons for trauma and elective workloads with increase in orthopaedic lists from within activity income.

Phase 2: For implementation during 2013/2014

- Full implementation of the YAS triage system and MTC fully open to all bypass cases including East Midlands from 2nd April 2013.

- Contingency plans are being developed to minimise any risk inherent in greater than expected numbers of major trauma cases or greater than expected numbers of over triaged cases than have been planned.

- Compliance with the national service specification.

- Additional Emergency Department staffing to meet increased workload and minimum standards.

- Paramedic in the YAS Control Room to direct transfer of major trauma patient to MTC/TU on clinical need alone.

- The timely secondary transfer of a patient with major trauma from TUs to MTCs, will be coordinated by the TU and MTC, the inter-hospital transfer will be arranged using the regional inter-facility transfer system currently in place across the region for YAS and EMAS.

- Timely repatriation of patients from MTCs to TUs is essential. A protocol has been agreed for this to take place within 48 hours of the decision and the repatriation will be undertaken using urgent tier ambulances.

- Emergency transfer, secondary transfer and repatriation will be supported by an ‘assumption of acceptance’ principle between MTCs and TUs.

- Ongoing prospective data collection and analysis

5. PATIENT PATHWAYS

The intended arrangements for patient transfer are as follows:

- Major trauma patients will be transported by ambulance to the Sheffield MTC within a guideline of a 45 minute travel time.

- Outside the 45 minute travel time, major trauma patients will be transported to the nearest TU and subsequently transferred to the Sheffield MTC if necessary once stabilised.

- Having received acute care at the Sheffield MTC, the patient will be transferred to their local hospital when it is safe to do so. Repatriation protocols have been agreed across the network and, whilst dependant on individual patient care, an average of 7 nights has been assumed for planning.

- It is recognised that a number of collateral patients who are not major trauma cases will be transported to the MTC (sometimes referred to as over triage). Initial treatment, which may include surgery, will be provided at the MTC when appropriate for these cases. Transfer back to the local hospital will be arranged as soon as it is safe to do so, and this has been proposed to be after one night on average.

- Patients for whom Sheffield is their local centre will remain under the care of STHFT including rehabilitation care in Sheffield.

6. ACTIVITY ASSUMPTIONS

The Yorkshire and Humber Public Health Observatory have been working with the Y&H network over the past year to establish a robust intelligence base to support commissioning and quality surveillance The main focus has been to undertake analysis and modelling of available data to establish an agreed set of activity figures for commissioners and providers as to likely volumes of activity for MTCs and TUs once the network becomes operational. The work to date has demonstrated very little overlap between available data sets and the view is now that none of our currently available data sets provide robust estimates of major trauma activity, particularly in terms of potential bypass cases. It has been agreed that the previous use of Health Resource Group (HRG) data was not a good proxy for true MT activity. In particular the VA code grid was not a reliable method for distinguishing between major trauma and other trauma. Yorkshire Ambulance Service (YAS) based estimates have been consistently low and may be systematically under-reporting for all Trusts. The best estimate is that the likely activity will be somewhere between YAS and HRG based activity estimates and that Injury Severity Score (ISS) data, if modelled appropriately, offers the best opportunity for producing high and low estimates of activity.

It is assumed that patients with ISS scores of >15 currently treated at TUs would be likely to bypass in future to MTCs. In order to assess the impact in terms of 'new activity' this would need to be offset against patients already admitted to MTCs as transfers (hence avoiding double counting). It is also possible that new commissioning guidance may result in further shifts in activity for patients with ISS scores between 9 and 15. This is likely to be a gradual rather than step change.

The activity projections used are derived from TARN data. This would suggest that for STHFT an additional 147 cases could be estimated in addition to existing direct admissions and existing transfers in.

From the previous analysis by specialty, most of the STH activity will be recorded in the specialty of Trauma and Orthopaedics. However, given the complex nature of major trauma cases, input will be required from a range of other specialties, notably Neurosurgery, Plastic Surgery and Vascular. In the income projections we have reviewed the scenario based on a range of activity assumptions.

We believe that the impact on the Sheffield MTC may be understated in these figures for a number of reasons:

- No activity figures have been received in respect of Derbyshire County patients. In practice we expect that there will be some transfer of workload from Chesterfield to Sheffield and an estimate of 10 -30 cases is currently assumed.

- Cases which currently "fly over" Sheffield to Leeds by helicopter.

- Cases transported to hospital by means other than an ambulance.

- Expected drift of more complex trauma to tertiary centres which may have already started as a consequence of NICE guidance.

7. DELIVERY MODEL AND GAPS IN CURRENT SERVICE

In the initial business case significant gaps for fixed infrastructure were assumed to exist to meet the new standards and higher flows of activity. These assumptions have now been revisited based on revised activity projections and compliance against the national standards, for 2013/34. The gap analysis for STHFT is summarised below.

7.1 STHFT

A process of identifying key gaps in service has been completed over the last eighteen months and has been discussed within the Trust by the STH Major Trauma Operational Group. The last review in November 2012 was based on the assumptions from activity modelling May to August 2012 but has been further reviewed against the published national specification. The gap analysis has changed from its initial findings in November 2011 due to reduced infrastructure plans from new activity assumptions. Priority has been assigned to the minimum staffing requirements that are anticipated to be needed for the national specification.

Priority 1 posts approved for phase 2 implementation

- Consultant presence in Accident and Emergency to be increased to 16 hours per day 7 days per week, requiring an additional 4 WTE consultant posts compared to current establishment. If the developmental standard for 24/7 cover for a Consultant led Trauma team is still required to be implemented over time this would require a further 5 WTE posts.

- Appointments for a Consultant in Rehabilitation Medicine and Band 7 Rehabilitation and Trauma Allied Health Professional to address the national specification requirements.

- Nurse staffing levels have been increased in A&E as part of investment from 2012/13 income to cope with increased workloads. Acuity levels to be kept under review.

Priority 2 posts delayed pending review from roll out

- Whilst most patients will be admitted under Orthopaedics, additional input will be required from a range of specialties. Most specialties have indicated that they will be prepared initially to support the additional cases within existing resources and to keep the workload under review. However, Vascular Radiology has indicated that the service is running to capacity and therefore additional consultant staff time will be required. This longer term plan includes the requirement for one additional Vascular Radiologist post.

- Additional therapy support, dietetics and psychology is also included in priority 2 for further review

A peer review process for Regional Trauma Networks was undertaken on 11th March 2013. The feedback report will be made available within 4 weeks. Initial feed back is positive and highlighted the enthusiasm and engagement of the clinical staff and senior management at STH. The panel members also praised a number of innovations including the redesigned neurosurgical pathway and Trauma Live system. Development areas include encouragement for the promotion of the ODN as an inclusive network to ensure continued engagement of the TUs, and for the MTC to take the lead role in education, training and TARN data improvements in the network

7.2 Trauma Units

The Trauma Units within this network have confirmed compliance with service standards, with the exception of the Bassetlaw hospital site. DBHFT has confirmed that trauma patients are to be taken to Doncaster Royal Infirmary. In the initial business case it was assumed that additional staffing costs associated with the transfer of major trauma patients from the TUs to the MTC, in respect of anaesthetist and nurse escorts for patients requiring critical care might be needed. The resource requirements have not been identified due to ongoing clinical concerns about such a model. Plans for a pilot YAS Enhanced Care Service are being discussed with commissioners as part of the implementation of a full roll out.

All Trusts in the network are expressing concerns about their ability to make significant improvements to rehabilitation care provision. A directory of rehabilitation services and further review of rehabilitation throughout the network is planned.

8. CAPITAL REQUIREMENTS

At this stage identified capital requirements are as follows.

8.1 STHFT A&E expansion

Because of the lay out of the Northern General Hospital site, options to expand the A&E department are very restricted. However, a business case for expansion has been developed which has several drivers:

- Continuing growth in general A&E demand.

- The need to continue to meet the required standards for A&E waiting times and the new quality standards.

- Strategic approach to developing the “rule out” and ambulatory models of emergency care;

- Joint strategic approach with NHS Sheffield for more integrated front door urgent care service with primary care involvement;
- Expansion in resuscitation facilities for major trauma, given that patients will typically spend 6 hours in the A&E department before being transferred for surgery.

8.2 STHFT Helipad

The NGH site does not have a helipad able to meet current standards and consequently some patients are flown by helicopter over Sheffield to Leeds. STH would need to provide a helipad to current standards to allow the MTC to be able to take all patients. Options and costs are still being assessed, and at this stage an estimate of the possible capital charges has been included in the revenue costs based on a £2m scheme. Charity funding options and assessment of potential patient numbers are being reviewed.

9. SIGNIFICANT RISKS

The degree of uncertainty around the activity and standards of becoming an MTC means that this plan still contains organisational risks. Key risks are identified as:

- Uncertainty about the activity projections for both the major trauma and collateral cases, and therefore the respective impacts on the MTC and TUs.

- The scope for potential disruption of other hospital services at the MTC due to the unpredictable and critical nature of major trauma admissions. This risk is to some degree mitigated by the additional infrastructure which has been proposed.

- Uncertainty regarding the size of the financial gap, due to changing activity assumptions, and how this will be bridged without compromising other services.

- The scale of the recruitment of consultant medical staff at the MTC and the elapsed time to achieve this in full.

- Experienced staff may be attracted to the MTC from the other Trusts who will be providing TU services creating staffing difficulties for them.

- The difficulty for commissioners and TUs regarding any change to funding flows and impact on residual emergency services and function as a TU.

- The development of a network wide, fully integrated major trauma rehabilitation system will be required in the future for improvements in rehabilitation services

10. CONCLUSION

Governors are asked to note the update on the development of the Service Development Plan for the Major Trauma Centre and that the Board of Directors

provided its support for the full opening of the Major Trauma Centre on 2nd April 2013.