

Major Trauma in the East of England and the Potential Establishment of a 2nd Major Trauma Centre in Norwich

To: Adults and Health Committee

Meeting Date: 9 March 2023

From: Simon Griffith, Head of Acute Services, NHS England – East of England

Electoral division(s): All

Key decision: No

Forward Plan ref: N/A

Outcome: To consider the programme of work set out in this paper to undertake a network review to establish a second Major Trauma Centre at the Norfolk and Norwich University Hospital. Improved access to major trauma now and in the future and alleviate pressure on the Cambridge service.

Recommendation: The committee is recommended to support the programme of work to determine the establishment of a second Major Trauma Centre in the region.

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1. Background

Every year across England and Wales, 16,000 (approximately) people die after injury. It is the leading cause of death among children and young adults of 44 years and under, and as such is a serious public health problem. In the East of England there were approximately 900 Major Trauma related deaths between July 2020 & June 2022.

Seriously injured adults and children are described as having suffered from major trauma. This is measured on a scale known as the Injury Severity Score (ISS) which scores injuries from 1 to 75, the latter being the most serious. Patients who have an ISS>15 are defined as having suffered from major trauma. In addition, patients with an ISS of 9-15 have moderately severe trauma.

It is not possible to determine the ISS at the time of injury as it requires a full diagnostic assessment and often surgical intervention in hospital. For these reasons a system of triage is used which identifies those patients who are most likely to have had major trauma, these patients are referred to as “candidate major trauma” patients. Pre-hospital emergency services have developed major trauma decision protocols for use by crews to determine the most appropriate destination of injured patients. Those with potential major trauma injuries (“candidate” major trauma patients) are taken directly to a Major Trauma Centre (MTC) where travel times allow, otherwise to the nearest Trauma Unit (TU) for rapid stabilisation and transfer to the MTC where those injuries exceed the capability of a Trauma Unit and in line with local protocols.

Major Trauma care is delivered through an inclusive Trauma Network delivery model. A Trauma Network includes all providers of trauma care, particularly: pre-hospital services, other hospitals receiving acute trauma admissions (Trauma Units), and rehabilitation services. The network has appropriate links to the social care and the voluntary/community sector. Major Trauma Centres (MTCs) sit at the heart of Trauma Networks as the centres of excellence providing multi-specialty hospital care to seriously injured patients, optimised for the provision of trauma care. They manage all types of trauma but specifically have the lead for managing candidate major trauma patients, providing consultant-level care and access to tertiary and specialised level services. Within the Trauma Network the MTC:

- Is optimised for the definitive care of injured patients. In particular it has an active, effective trauma Quality Improvement programme. It also provides specialist early/hyper acute rehabilitation as well as a managed transition to rehabilitation and the community.
- Takes responsibility for the care of all patients with Major Trauma in the area covered by the Network. It also supports the Quality Improvement programmes of other hospitals in its Network.

An MTC provides 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, specialist early/hyper acute rehabilitation and interventional radiology, along with appropriate supporting services, such as critical care.

The NHSE Service Specification D15/S/a Major Trauma states *“It is widely accepted that access and travel times by ambulance to a major trauma centre should be within 45 minutes, unless the patient is too unstable and requires a more immediate optimisation at a TU prior to a secondary transfer to an MTC”*. Secondary transfers from a TU to a MTC will occur within an hour of the request for transfer; this is to minimise the patient’s time from injury to accessing definitive treatment. This is a particular challenge in East of England where significant populations reside more than 45 minutes away from the MTC at Cambridge.

A TU could be the primary receiver of seriously injured patients and are responsible for resuscitating and caring for such patients who require optimisation if they were too unstable and therefore are unable to cope with a 45 min land ambulance transfer to MTC. A TU may also receive local trauma patients with less serious injuries, which will include simple fractures of one limb, lacerations, and minor head injuries. In addition, trauma units need to have the expertise to recognise patients who are beyond their capability to treat, and to be able to transfer them rapidly to the MTC.

2. The East of England Trauma Network

The East of England Trauma Network was created in April 2012 to provide comprehensive major trauma services for residents of the East of England region (Bedfordshire, Cambridgeshire, Norfolk and Suffolk and parts of Essex and Hertfordshire).

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The configuration of the East of England Trauma Network was based on detailed modelling of major trauma activity undertaken in 2010. This indicated that the regional trauma system should be prepared to manage an age standardised rate of 33.7 severely injured patients (defined as an injury severity score > 8) per 100,000 residents per year.

It was considered that most of these patients could be managed within the Acute Hospital setting but that a proportion of them, particularly the more seriously injured patients (defined as ISS > 15) would benefit from access to a specialised Major Trauma Centre.

The directly age standardised rate for ISS > 15 patients was 12.1 per 100,000 population (95% CI 11.0 to 13.2). Based on a population of 5,717,400 at a time and taking geographical factors and neighbouring Trauma Network facilities into account, these rates equated to between:

- 1,818 and 2,035 ISS > 8 patients a year and
- 629 and 755 ISS > 15 patients a year.

These activity levels, together with the configuration of existing hospital services, led to the development of a Trauma Network hub and spoke model with a single regional Major Trauma Centre at Cambridge surrounded by 12 Acute Hospital Trauma Units.

Patients from the south of Essex and south Hertfordshire have a pathway into London Trauma Networks.

3. Major Trauma patients in the region

The mid-2019 population estimate for the East of England is 6,236,072. An increase of 518,672 or 9% since 2010. The population is spread over an area of 19,120 km² and 39.3 % of residents are aged 65 years or older.

Trauma Audit and Research Network (TARN) data in the 10 years from 2010 to 2020 shows a gradual increase in the number of ISS>15 patients being recorded. In the 2018-19 and 2019-20 years, there were 1757 and 1745 ISS>15 patients across the Network, representing 28.3 per 100,000 population. With an incomplete TARN dataset, this will be an under-estimate of actual numbers. The initial Network modelling was taken from several sources, many with incomplete datasets. Along with the rise in population, improved data collection can largely explain the current higher rate rather than a notable change in the incidence of major trauma events.

An increasing number of major trauma patients are not being transferred to the MTC. The November 2022 TARN report shows that (excluding CUHs numbers) 83.4% of ISS>15 remained in TUs, whereas it was 77.9% in the Nov 2021 report. The level of Consultant delivered trauma team care, and the prolonged delays in transferring patients from a Trauma Unit into the Cambridge MTC remain areas of concern. The proportion of major trauma patients remaining in Trauma Units across the Network reflects inequitable access. Given the geography of the East of England and applying the specified 45mins journey time by road to a Major Trauma Centre, much of the region, particularly in the coastal regions of Norfolk and Suffolk, sit outside of this zone. Therefore, in cases of major trauma in these areas, unless transferred by air, patients will not be transferred directly to the MTC at CUH, but will be transported to the closest Trauma Unit with a second onward transfer to the MTC following stabilisation if required. The nearest MTC outside of London and EoE is the Queens Medical Centre in Nottingham (circa 90 minute travel time from Peterborough).

4. The Challenge

The combination of population expansion (9% increase on planned population), demographic change together with existing hospital and service pressures and a significant population cohort outside of the 45-minute travel time (see Annex A) has resulted in a network operating under significant pressure.

The recent Covid19 pandemic has further highlighted capacity and network resilience issues within the MTC and Trauma Network with an increasing number of diverss being implemented due to capacity constraints at CUHFT.

A request was issued through the EoE Trauma Network to local Trauma Unit providers to note their interest in being part of the solution to the regional resilience issues and the Norfolk and Norwich University Hospitals NHS Foundation Trust (N&NUH) provided the only positive response.

The East of England Trauma Network, CUHFT, N&NUH and NHSE Specialised Commissioning had collaborative discussions about strengthening the resilience of trauma services in the region. N&NUH is by far the busiest Trauma Unit in the

Network (seeing approximately 825 cases a year which compared to 1745 at CUHFT) with a comprehensive range of additional clinical services to support major trauma patients, consequently it was identified as ideally suited to being able to provide care safely and effectively to a defined group of major trauma patients who would otherwise be transferred to the MTC in Cambridge. On 25th November 2020 it was agreed Norfolk and Norwich Hospital's would provide specialised trauma support (non cranial only) for the region from 1st December 2020. This support was considered, at this stage, in the context of a mutual aid arrangement in the face of COVID related pressures facing the established provider. The December target date slipped, however on 19th January 2021, Norfolk & Norwich University Hospital commenced provision of enhanced specialised trauma support, establishing a service to receive selected (non-cranial & non-pelvic) secondary transfers from neighbouring Trauma Units (TUs).

The modelling expectations based on TARN returns suggested that the impact of diverts from West Suffolk Hospital, Queen Elizabeth Hospital and Ipswich Hospital are in the order of 3 patients each month.

The establishment of the Norwich service was successful and placed the network on a more resilient footing. Following further discussions a broad consensus was arrived at following collaborative engagement with clinicians, Trust Executives, and managers from across the system that to meet rising demand, improve mortality outcomes, address delays in transferring patients and embed greater resilience in the system the establishment of a second Major Trauma Centre for the region, based at N&NUH should be carefully considered. Subsequently on 29th April 2021 a paper was presented to the Regional Executive Team (RET) requesting support for:

- i) the continuation of Norfolk and Norwich University Hospital NHSFT (N&NUH) specialised trauma support (non-cranial & non-pelvic only) to the network; and
- ii) a network review to consider the establishment of 2nd regional Major Trauma Centre (MTC) within the network located at N&NUH.

5. The Current Programme

The N&NUH has executive level support to become an MTC and is supported by CUHFT Trauma Team and CUHFT executive team. Norwich is geographically well placed to address equity of access issues and outside of CUHFT has the most comprehensive range of clinical expertise available to support the establishment of an MTC. Plans for Neurosurgery support from CUHFT have been agreed. In addition, the Colman Unit at Norfolk Community Health and Care Trust is the only level 1 neuro-rehabilitation unit in the East of England and is therefore well placed to facilitate enhanced trauma rehabilitation as part of an ICS solution.

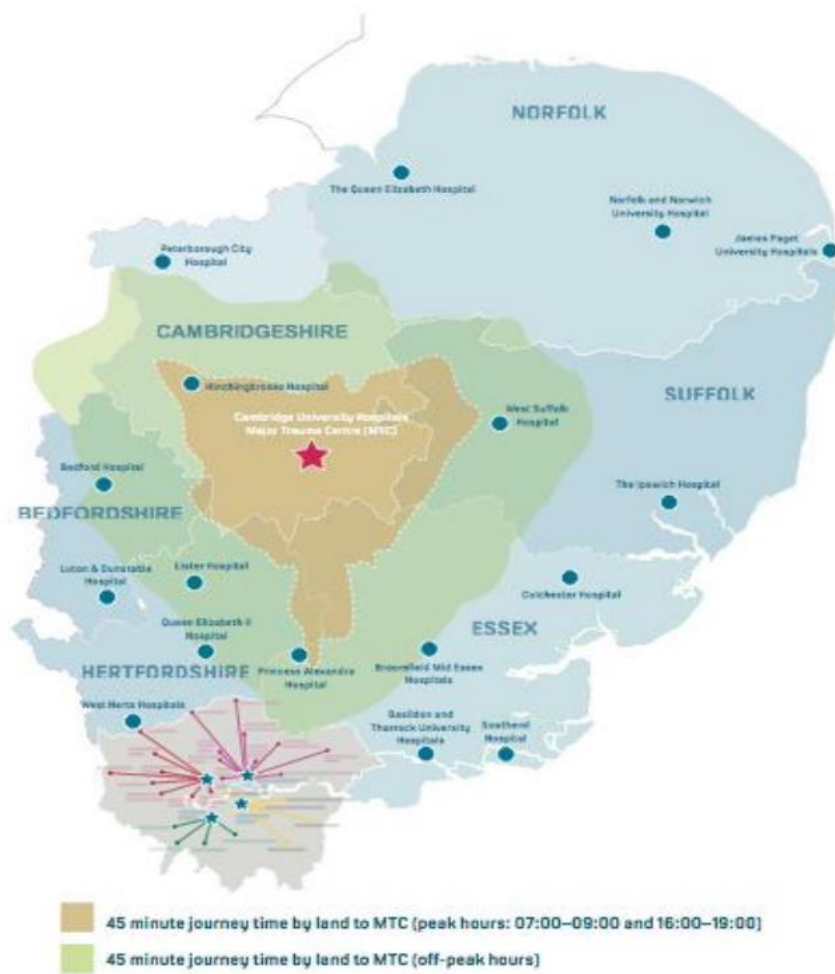
A Project Planning Group has been established. The programme is working through a first phase, the purpose of which is to review current and future demand for major trauma alongside the current Major Trauma Network in the region and make an evidence-based recommendation as to how a sustainable, clinically effective MTC located at N&NUH could meet service demands now and in the future. These are not 'new' patients within the region, they are already here but the pathway for some patients may change for better care provision.

This first phase involves five projects which will be delivered up to March 2023 when a recommendation will be made based on the projects' outcomes:

1. A public health needs assessment of the population
2. A gap analysis and service requirements for N&NUH
3. A clinical case for change
4. A financial impact assessment
5. Effective and comprehensive stakeholder involvement

Engagement planning is underway with regional stakeholders (NHSE Specialist Commissioning, NHSE CRG Major Trauma, Regional ICSs, Regional Healthwatch, East of England Ambulance Service and Acute Hospitals within the Trauma Network) and HOSCs to collaborate in undertaking an impact analysis for the introduction of a second adult MTC in the Network based at N&NUH.

Annex A: Major Trauma Blue Light Travel Times



Annex B - EoE Trauma Network providers

Major Trauma Centre
Cambridge University Hospital NHS Foundation Trust
Trauma Units
Bedford Hospital NHS Trust
Colchester Hospital University NHS Foundation Trust
East and North Hertfordshire NHS Trust (Lister Hospital)
Ipswich Hospital NHS Trust
James Paget University Hospital NHS Foundation Trust
Luton and Dunstable Hospital NHS Foundation Trust
Mid Essex Hospital Services NHS Trust
Norfolk and Norwich University Hospital NHS Foundation Trust
Peterborough and Stamford Hospitals NHS Foundation Trust
Princess Alexandra Hospital NHS Trust
Queen Elizabeth Hospital King's Lynn NHS Trust
West Suffolk NHS Foundation Trust
Local Emergency Hospital
Hinchingbrooke Hospital Healthcare NHS Trust
Ambulance Service
East of England Ambulance Service NHS Trust

Annex C - East of England Trauma Network Distribution of patients by ISS

East of England Trauma Network

Distribution of patients by ISS

01 July 2021 to 30 June 2022

Hospital	1 - 8	9 - 15	16 - 24	25 - 45	>45	Total	>15
Addenbrooke's Hospital	252 (14.4%)	606 (34.6%)	329 (18.8%)	527 (30.1%)	39 (2.2%)	1753	895 (51.1%)
Bedford Hospital	85 (26.5%)	125 (38.9%)	62 (19.3%)	49 (15.3%)	0 (0.0%)	321	111 (34.6%)
Broomfield Hospital	134 (26.6%)	229 (45.4%)	105 (20.8%)	36 (7.1%)	0 (0.0%)	504	141 (28.0%)
Colchester General Hospital	56 (27.1%)	100 (48.3%)	25 (12.1%)	26 (12.6%)	0 (0.0%)	207	51 (24.6%)
Hinchingbrooke Hospital	34 (28.8%)	45 (38.1%)	23 (19.5%)	16 (13.6%)	0 (0.0%)	118	39 (33.1%)
Ipswich Hospital	76 (24.5%)	133 (42.9%)	53 (17.1%)	48 (15.5%)	0 (0.0%)	310	101 (32.6%)
James Paget Hospital	62 (23.5%)	140 (53.0%)	35 (13.3%)	27 (10.2%)	0 (0.0%)	264	62 (23.5%)
Lister Hospital	122 (24.4%)	197 (39.5%)	114 (22.8%)	64 (12.8%)	2 (0.4%)	499	180 (36.1%)
Luton & Dunstable Hospital	103 (27.1%)	169 (44.5%)	62 (16.3%)	44 (11.6%)	2 (0.5%)	380	108 (28.4%)
Norfolk & Norwich University Hospital	168 (20.4%)	386 (47.0%)	160 (19.5%)	107 (13.0%)	1 (0.1%)	822	268 (32.6%)
Peterborough City Hospital	112 (24.6%)	212 (46.6%)	76 (16.7%)	55 (12.1%)	0 (0.0%)	455	131 (28.8%)
Princess Alexandra Hospital	51 (16.9%)	163 (54.0%)	48 (15.9%)	40 (13.2%)	0 (0.0%)	302	88 (29.1%)
Queen Elizabeth Hospital Kings Lynn	51 (22.0%)	117 (50.4%)	41 (17.7%)	23 (9.9%)	0 (0.0%)	232	64 (27.6%)
West Suffolk Hospital	93 (27.0%)	145 (42.2%)	73 (21.2%)	33 (9.6%)	0 (0.0%)	344	106 (30.8%)
Total	1399 (21.5%)	2767 (42.5%)	1206 (18.5%)	1095 (16.8%)	44 (0.7%)	6511	2345 (36.0%)

Annex D - List of Major Trauma services provided at Addenbrookes

A MTC has all the facilities and specialties required to be able to treat patients with any type of injury in any combination. Examples of such patients are patients who have suffered traumatic amputation of one or more limbs, patients with a serious head injury and patients who have suffered a number of injuries (known as polytrauma) such as a combination of abdominal and chest injuries.

MTC Requirements (not exhaustive)

- 24/7 consultant available on site to lead the trauma team
- Trauma team present 24 hours a day for immediate reception of the patient.
- Ability to undertake resuscitative thoracotomy in the emergency department (ED);
- A massive haemorrhage protocol in place for patients with severe blood loss which includes the administration of tranexamic acid within 3 hours of injury, and transfusion specialist advice should be available 24 hours a day;
- 24/7 immediate availability of fully staffed operating theatres;
- Consultants available on site within 30 minutes when required; Neurosurgery; Spinal and spinal cord surgery; Vascular surgery; General surgery (adult or child); Trauma and Orthopaedic surgery; Cardiothoracic surgery; Plastic surgery; Maxillofacial surgery; Ear nose and throat surgery; Anaesthetics; Interventional radiology; Intensive care.
- Immediate (defined as within a maximum of 60 minutes, ideally within 30 minutes) access to computerised tomography (CT) scanning and appropriate reporting within 60 minutes of scan
- Availability of interventional radiology within 60 minutes of referral.
- Immediate access to critical care or high dependency care
- A defined team to manage on-going patient care, to support patients through the pathway and into rehabilitation. Model for the key worker may vary in centres.
- Specialist nursing and allied health professional trauma roles.
- Access to cross speciality supporting services which will include pain management, rehabilitation medicine and neuropsychology and neuropsychiatry.
- A defined ward for major trauma patients
- A defined service for early/hyper acute trauma rehabilitation which meets the needs of patients with ISS >8.
- Review within 3 calendar days by a Rehabilitation Medicine consultant or alternative consultant with skills and competencies in rehabilitation

The prescription for rehabilitation reflects the assessment of the physical, functional, vocational, educational, cognitive, psychological and social rehabilitation needs of a patient.

Clinical Specialties

- Emergency Medicine

- Radiology • Interventional Radiology
- Neurosurgery
- Spinal Cord Injury Services (acute)
- Vascular Surgery • General Surgery
- Cardiothoracic Surgery
- Trauma and Orthopaedic Surgery
- Plastic Surgery
- Maxillo-Facial Surgery
- Ear nose and throat surgery
- Transfusion Services
- Pathology services
- Anaesthetics
- Theatres
- Intensive Care
- Early/Hyper Acute Phase Rehabilitation Services
- Clinical Psychology
- Organ Donation