Document Title	**Scottish Trauma Network – Peer Review Report 23/24**
Department:	**Strategic Networks**

Trauma- Clinical Peer Review

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Foreword

It was a great privilege and honour to be invited by Dr Martin McKechnie (now former) National Clinical Lead for the Scottish Trauma Network (STN) to help in conducting its recent peer review.

I had for a number of years been involved in sharing learning and experience with the STN and Martin as part of a Five Nation Major Trauma group, and naturally, when the opportunity arose to be part of the national peer review and see the service live I jumped at the opportunity.

I was not disappointed to see how all of the diligent planning of the STN has translated into a well-coordinated Major Trauma Service composed of the four regions, each unique in their population, and geographical needs but all of which have adapted solutions that quite clearly deliver high quality care for all patients who have suffered Major Trauma in Scotland.

In particular I was struck by the sense of pride and ownership of a common language and culture of the evolving STN which I am sure will mature even further as a result of the reflections on the teams learning and aspirations contained in this peer review.

I and the review team recognised the considerable investment that has been made in the STN by the Scottish Government and which has in our opinion led to the enhanced care received by patients. However, we also recognised from our experience of other Networks that this excellent start will require continued support to complete the original plans for universal access to prehospital care and rehabilitation and to build on the considerable improvements already achieved.

Kind regards

Mr Robert Bentley

FRCS, FDSRCS, FRCS(OMFS)

Consultant Craniofacial and Oral and Maxillofacial Surgeon

National Clinical Director for Major Trauma and Burns

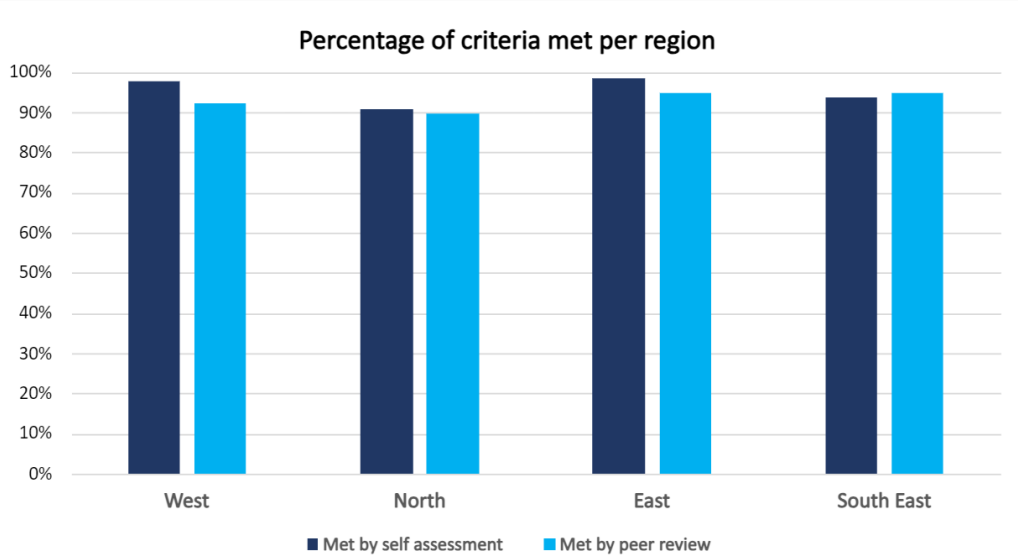
Chair National Programme of Care (NPoC) – Trauma

Clinical Director South East London Kent and Medway Major Trauma Network

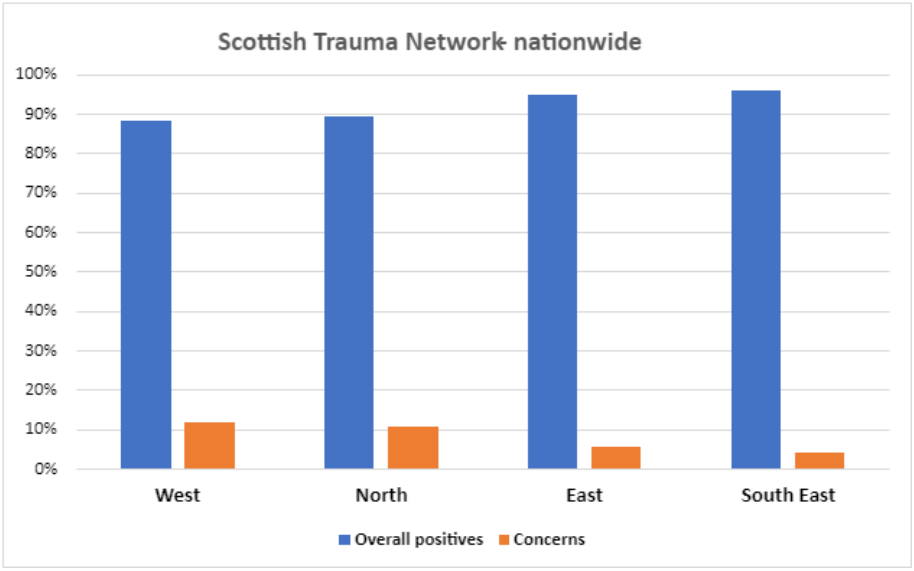
Trauma- Clinical Peer Review

Executive Summary

The need for a peer review of trauma services in Scotland was identified by an internal National Services Division review of the Scottish Trauma Network in 2022/23. The process for this peer review was closely modelled on similar reviews of trauma services in England and Wales, which had previously taken place. It was designed to be a collaborative, supportive service improvement process led by the regions and services themselves. The review involved desktop examination of evidence submitted by the regions followed by in-person visits to clinical locations across Scotland.



Graph 1 The total percentage of criteria met by regions, through self-assessment versus peer review



Graph 2 The overall positive ratings versus concerns, shown for each region.

All four regions' self-assessments closely mirrored the findings from the in-person review (see Graph 1). Regions were rated on each requirement using a five-point scale, from 'significant

achievement' to 'immediate risk'. With all scoring tallied, each region was noted as performing well (Graph 2) with most requirements rated positively, and a small percentage of 'concerns' or 'serious concerns'. No immediate risks were identified throughout the Scottish Trauma Network.

The review identified that trauma services in Scotland, while still immature, deliver high quality, person-centred patient care, with many examples of excellent achievements. It has also identified the following areas for improvement:

- the need to bolster rehabilitation across the network
- opportunity to make better use of data to inform improvement
- scope to review the complex set of minimum requirements which define the service
- the opportunity to develop national trauma education programmes to support service delivery and enhance patient outcomes

One theme which was prevalent across all regions was the need to be able to better identify patients who may have traumatic injuries but who have not presented as trauma patients. For example, an elderly person who has fallen and suffered multiple fractures but has presented through a medical route and is not known to the trauma ward. This review makes recommendations across the network that the service should be more effective at offering patients such as these the complex care and rehabilitation available for other trauma patients.

The review has made over 100 recommendations for improvement for the network as a whole and for regions to take forward. These recommendations broadly fall into the following categories:

- Education and workforce
- Equity of access
- Quality
- Data and outcomes

1. Introduction

The Scottish Trauma Network (STN), consisting of the four regional networks and Scottish Ambulance Service, is now in its sixth year with phased implementation having begun in 2018. Initial service implementation is now complete, with the acknowledgment that not all envisaged services are in place due to fiscal constraints.

It was important assess where the STN and major trauma services currently stand in relation to their maturity and ability to deliver the objectives set out at the outset of the STN and an external peer review ensured objectivity of this process. We are extremely grateful for the commitment and work undertaken by all members of the peer review team who brought a wealth of knowledge and diligence to the process (Appendix 4 Peer review panel). The output from this first peer review process is not only welcomed openly but will help to shape the STN strategic framework for the next three years.

We are in a stronger position with regards to major trauma management throughout Scotland. It was a privilege to visit each of the regions and meet many of the staff involved in caring for trauma patients. The dedication, commitment and passion was palpable and a heartening experience.

However, there remain areas that could be improved to enhance the service even further, there remains inequity of access to rehabilitation services and advanced pre-hospital care in some areas of the country. Both are essential for improving survival, functional outcomes and quality of life following traumatic injury. Ongoing education and training are fundamental in maintaining a knowledgeable, confident, and engaged workforce and this remains a key area of focus.

Together we can continue to improve the outcomes of those who sadly suffer traumatic injury. With a clear vision, enthusiasm, and a collaborative approach we can achieve a great deal.

Dr Tim Hooper

National Clinical Lead

2. Purpose of the review

This process involved a team of trauma specialist clinicians and managers reviewing evidence submitted by the four regions in the STN. This was examined against criteria covering the overall functions and governance of the network, the processes within each area of delivery within the regions (see 'Review Criteria') and the outcomes for each region and the network as whole as measured by the Scottish Trauma Audit Group (STAG).

Once reviewed, each region will be required to develop action-plans to address the recommendations and issues identified by the review team and outlined within this report. These work-plans will be monitored by the STN.

The review is intended to:

- Improve the quality and effectiveness of care.
- Improve the patient and carer experience.
- Undertake an objective and independent, review of services.
- Provide recommendations to support the development and continual Quality improvement program for the network and its members
- Encourage and share good practice.

3. Methodology

The peer review process followed the Peer Review Guide: Major Trauma Networks of England and Wales[1], and followed best practice as set out in the South Wales Trauma Network peer review report from 2022[2].

The Scottish review process began in September 2023. A panel was gathered comprising 15 colleagues from: five Scottish health boards; NHS England and the Scottish Trauma Audit Group (STAG) (Appendix 4 Peer review panel). Six members of the review panel conducted each region's review, with no member participating in their own area. NHS England and STAG representatives were present throughout for consistency.

The following facilities were assessed:

- Adult Major Trauma Centres
- Adult Major Trauma Centres- Rehabilitation
- Paediatric Major Trauma Centres
- Paediatric Major Trauma Centres- Rehabilitation
- Adult Trauma Units
- Paediatric Trauma Units
- Local Emergency Hospitals (where they are part of the network)

[1] Peer Review Guide: Major Trauma Networks of England & Wales, August 2022.
[2] South Wales Trauma Network: Peer Review Final Report, October 2022.

Pre-hospital care and transfer facilities and processes were not assessed at this stage.

Regions were assessed against an expansive set of minimum requirements for trauma in Scotland, which can be broadly categorised into the following themes:

- Access to facilities and resources
- Staffing availability
- Pathways and protocols
- Communication
- Education

Each region submitted evidence to support their compliance with the requirements, along with operational and governance documents such as local risk registers. This evidence was collected on SharePoint where it was reviewed by the peer review panel. Members of the panel then visited each region in-person to observe facilities and meet with teams to discuss how they met requirements.

The peer review panel recorded whether each requirement was met respectively, through submitted Self-Assessment evidence and by observation at the in-person visits (Graph 1).

Each criterion was graded on a scale as follows:

Significant Achievement	Innovative practice relating to the service
Good Practice	Common practice undertaken very well
Concern	An issue that is affecting the delivery or quality of the service that does not require immediate action, but can be addressed through the services' work programmes
Serious Concern	An issue that whilst not presenting an immediate risk to patient or staff safety is likely to seriously compromise the quality of patient care, and therefore requires urgent action to resolve
Immediate Risk	An issue that is likely to result in significant harm to patients or staff or have a direct serious adverse impact on clinical outcomes and therefore requires immediate action

All findings were recorded in Excel, with data on respective regional facilities amalgamated to allow an analysis by region to be carried out.

4. Review findings

The findings of the review are split between regions and are presented here as a headline narrative. The detail of review findings is available to each region on request from the Scottish Trauma Network team at NHS NSS.

A number of recommendations were made that are assigned directly to the STN Core Team within NSD and can be found in Table 1 – Network Recommendations.

Table 1 – Network Recommendations

Recommendation number	Area	Recommendation
1	Network	The network should consider the service specification as set out in the minimum requirements, and review these so they are more consistent, measurable, and meaningful
2	Network	The network should look to develop standard operating procedures and clinical guidelines
3	Network	STAG should consider providing training on accessing and using data
4	Network	A standardised approach to delivering education programmes across the network would be beneficial.
5	Network	There should be an organisational recognition developed around the level of training and education required for trauma nursing staff and an agreement reached on allowances for training time.
6	Network	The network should ensure that trauma prevention is a focus at a national STN level, rather than regional. Consideration should be given to remove 'trauma prevention' from regional requirements.
7	Network	Consider implementing a national protocol or business continuity plan for capacity challenges between regions.
8	Network	Re-evaluate whether there is a necessity for different sets of requirements for adults and paediatrics in Trauma Units. Units tend to serve both adult and paediatric patients with the current staffing model, so there is much duplication in the two sets of requirements.
9	Network	The network should support the development of EMRS East, to improve resource for a RED response when requested by the trauma desk
10	Network	The network should undertake a review on radiology reporting to identify improvement in this area.

4.1 West region

The West of Scotland Trauma Network (WoS) comprises an adult Major Trauma Centre (MTC) located in the Queen Elizabeth University Hospital and a paediatric Major Trauma Centre (PMTC) in the Royal Hospital for Children; both in Glasgow. Within the WoS network there are also six Trauma Units located in Glasgow Royal Infirmary, Dumfries and Galloway Royal Infirmary, University Hospital Crosshouse, the Royal Alexandria Hospital, University Hospital Wishaw and Forth Valley Royal Hospital. There are also Local Emergency Hospitals in each of the NHS Boards within this region, however, due to proximity these are closely supported by the Trauma Unit within the Board and were not considered as part of this review.

For the purposes of this review, Forth Valley are reviewed as part of the South East Region as there is significant overlap.

The region cares for a population of ~2.7m people (48% of Scotland's population) and manages around 60% of the country's major trauma cases. The West regional network launched in 2021 and has had £18.5m of investment.

4.1.1 Summary

The review team visited the WoS Major Trauma Centre (MTC) and Paediatric Major Trauma Centre (PMTC) in December 2023. Walk-rounds of both facilities took place, along with in-person question and answer sessions with local clinicians. Representatives from the Trauma Units (TUs) also attended to give an overview of their own TUs and the Network to answer further questions.

W.1. The review team would strongly suggest that the WoS Network move to form Clinical Reference Groups (CRG), made up from speciality representatives from the MTCs and TUs, which should develop Standard Operating Procedures (SOPs) to help define the pathways and standards of care. Examples would be a CRG for Orthopaedics that could produce SOPs for pelvic trauma and complex lower limb injuries. Setting up CRGs and SOPs, adaptable to each unit's resources, will allow a more consistent approach, a common language and build a culture which will ensure equity of access, improved quality of outcome and value for money.

4.1.2 Adult Major Trauma Centre and Rehabilitation

The review team noted that that on-site consultants were present 24-hours a day, seven days a week, and that there is an automatic acceptance pathway for any patient in the network.

The tiered trauma response ensures that hospital resources are utilised appropriately for patients with differing needs. There was also clear collaborative working with the Scottish Ambulance Service (SAS). This enables a good, structured response and ensures that when patients arrive in the resuscitation room their care is of a high standard. The large resuscitation rooms themselves were seen to be of a very high standard, with excellent equipment and care at the front door.

There is excellent access to well-equipped theatres including a hybrid theatre, directly accessible from main lift shafts. The review team note that work is ongoing to increase access to ortho-plastics theatres (surgical time for orthopaedic and plastic surgeons to work together to repair open wound fractures). Currently one session per week has been implemented and the team recognised increasing capacity would result in shortened waiting times for patients as it was noted that the time to pelvic fracture fixation can be prolonged due to theatre and staff availability.

W.1. The review team would strongly suggest that the WoS Network move to form Clinical Reference Groups (CRG), made up from speciality representatives from the MTCs and TUs, which should develop Standard Operating Procedures (SOPs) to help define the pathways and standards of care. Examples would be a CRG for Orthopaedics that could produce SOPs for pelvic trauma and complex lower limb injuries. Setting up CRGs and SOPs, adaptable to each unit's resources, will allow a more consistent approach, a common language and build a culture which will ensure equity of access, improved quality of outcome and value for money.

Further work is required to enable access to specialist neurosurgical services for neuro-critical patients and patients with traumatic brain injury who are not admitted to the Institute of Neurosciences.

The ability to transfer unstable patients directly from the helipad to a "Hybrid Theatre" for Interventional Radiology and combined surgery was an excellent innovation.

The review recognised the high standard of senior clinical leadership that was observed throughout the service and particularly within the multidisciplinary team within the ward.

W.2. On access to the major trauma service and ward itself, the review team notes that it can be challenging for the MTC to identify trauma patients from within the hospital, and that patients who are not admitted to the ward do not receive the enhanced level of acute care received in the ward. Learning from smaller regions and MTCs may assist in this regard. The ward itself also hosts non-trauma patients from other services within the hospital, which could further impact access to the excellent trauma services delivered by the region.

W.3. The ward rehab model is viewed as a particular area of good practice, however the review has concerns that this service is only available to patients within the ward and not trauma patients who may be elsewhere in the hospital. There are also well-understood challenges in resourcing the minimum requirements for adult rehabilitation. The trauma coordinators focus on the acute, 'front-door' aspect of the service. This is viewed as presenting a risk to the provision of equitable care across the pathway for trauma patients.

4.1.3 Paediatric Major Trauma Centre and Rehabilitation

The review team wish to congratulate the West of Scotland (WoS) Network on the paediatric service provided to children and young people. The facilities within the centre are of the highest quality and clearly focused on the welfare of the child or young person. This review would like to commend the energy and focus on the child and their family, which is evident throughout, particularly the facilities and services available to families and carers.

The review team would like to congratulate the service on the leadership team's motivation and experience. During the site visit it was evident that the consistent contact provided by this team has a very positive impact on the patient and family experience.

The emergency department is very well equipped, with clear protocols and processes in place. This dedicated space provides all appropriate facilities and personnel. For some specialities support is provided ad-hoc by the adult MTC and this review would recommend service level agreements put in place where none exist.

The national single point of contact works well within the unit and ensures children and young people receive appropriate, timely care.

The unit engages very well with the region's trauma units and supports them extensively. This further underlines the focus within the centre on the importance of caring for and supporting young trauma patients, even those who may not be within the PMTC.

W.4. The review team note areas for improvement, recognised by the local team. Nursing education and competency was one such area. This review would recommend development of regional nursing education action plans to ensure that, for example, level 2 nurses are available for all trauma calls. Additionally, there is an awareness that there could be some development of ward-based competencies which would have a real benefit both to staff and patients.

W.5. Rehabilitation is a key service within the network and the review team recognise the excellent work undertaken by the PMTC in this area. However, the lack of a clinical

lead for rehabilitation does present some risk; and this was recognised through self-assessment. This review takes into account the resource barriers which exist in this regard but would ask that the region look closely at closing this gap.

4.1.4 Trauma Units

The review team felt that the engagement from clinical leaders in the Trauma Units (TUs) and trauma coordination services was exemplary. The teams have made a significant leap forward from the establishment of the trauma units, while acknowledging that there's still much work to be done. There is regular discussion between the trauma coordination teams within the trauma units with adult and paediatric MTCs. The review panel was impressed by the two-way communication flow regarding each patient to ensure they are safe and receive appropriate care.

The TUs demonstrated that they have close links with the Local Emergency Hospitals (LEHs) and it is clear that they work closely with and enable the LEHs to function well within the network as a whole. Quality improvement programs are in place to continually improve services and what really stood out was the significant improvements which have been made for the care of the patient.

W.6. Education was an area highlighted as an area for focus during the review. Opportunities the TUs could look at include the potential of board conferences, e.g. level 2 for nursing teams and considerations for medics in damage control surgeries if you can't get to the MTC in time.

W.7. There were common issues dealing with head injuries, and this review would recommend developing a standard network approach to this issue.

4.2 North region

The North of Scotland Trauma Network (NoS) comprises an adult Major Trauma Centre located in Aberdeen Royal Infirmary and a paediatric Major Trauma Centre in the Royal Aberdeen Children's Hospital. Within the NoS network there is one Trauma Unit located in Raigmore Hospital in Inverness as well as six Local Emergency Hospitals in Dr Gray's Hospital, Belford Hospital, Caithness General Hospital, Western Isles Hospital, Balfour Hospital, and the Gilbert Bain Hospital.

The region covers 60% of the land mass of Scotland, cares for a population of ~890,000 people (16% of Scotland's population) and manages around 15% of the country's major trauma cases. The North regional network launched in 2018 and now receives £4.8m of investment annually.

4.2.1 Summary

The review team visited the North of Scotland (NoS) Major Trauma Centre (MTC) and Paediatric Major Trauma Centre (PMTC) in February 2024. Walk-rounds of both facilities took place, along with in-person question and answer sessions with local clinicians.

Representatives from the Trauma Unit (TU) and Local Emergency Hospitals (LEHs) also attended to give an overview of their own hospitals and the network and answer further questions.

N.1. The review team recommend that in collaboration with the WoS network, the NoS network develop a formal pathway with a robust governance process for major

trauma patients from the Western Isles who are triaged to the WoS MTC for initial management and are then repatriated to their local emergency hospital. This would be beneficial to the NoS network as well as those patients from the Western Isles and more western/southern parts of NHS Highland.

4.2.2 Adult Major Trauma Centre and Rehabilitation

There is a commitment to providing on-site consultant cover 24-hours a day and the resuscitation rooms were well equipped. It was noted that weekend cover can be challenging as the Trauma Team Leader is responsible for the entire Emergency Department, which can compromise the immediate availability of a consultant, despite being on site.

The review team encouraged the proposed progression from the current two-tiered trauma response to implementing a three-tiered system. This will better utilise resources and would build on engagement from specialties within the hospital.

This review commends the protocols for rib fixation and chest wall trauma which will have a positive impact for patients, as evidenced by the mortality data in patients with chest wall trauma. Timely access to theatre access for specialties such as ortho plastics, pelvic fixation and emergency theatre was highlighted as a particular area of good practice.

In the major trauma service, it was noted that the major trauma consultant cover contained a variety of specialties, which is recognised as good practice by the Royal College of Surgeons.

N.2. The review team notes that currently there is only five-day consultant and major trauma coordinator cover and would encourage that work is progressed to expand from five days to seven days. This increased coverage would enhance the major trauma service.

N.3. There is no dedicated major trauma ward in the adult MTC at present. Evidence shows that having a cohorted area for trauma patients has a significant impact on the continuity and coordination of both acute care and rehabilitation. The review panel encourages the NoS to work towards establishing a major trauma ward within the MTC which would lead to increased engagement from surgical specialties, reduce length of stay and provide rehabilitation teams with a safe space for assessment and rehabilitation.

N.4. The review team note the challenges that exist across the network in accessing timely radiology reports which can result in delays in patients moving through the trauma pathway. It is recommended that the Scottish Trauma Network undertake a review on radiology reporting to identify improvement in this area.

The review recognises the strong leadership provided across the service.

The review team noted the enthusiasm and commitment from the multi-disciplinary rehabilitation team and were encouraged by the support for rehabilitation from the senior management team since the inception of the network.

Despite the challenges faced due to not having a designated major trauma ward, the AHP teamwork across various wards to provide patient care and have established relationships and rapport to ensure the patients are getting the rehabilitation input required. The review team commends the major trauma coordinators for being able to identify where patients are located

throughout the hospital. The development of a follow-up model from admission to the service through to discharge to the community is identified as a particular area of good practice.

There are well understood challenges in the development of specialist community rehabilitation due to the NoS not receiving the final tranche of Scottish Government funding, however the strong network that has been established is evident.

4.2.3 Paediatric Major Trauma Centre and Rehabilitation

Trauma coordinators in the NoS fulfil a key role in the service. It was evident that patients were tracked from resuscitation and throughout the patient journey to advocate for and coordinate the best care for the patient.

The review would like to congratulate the service for an exemplary focus on education in the Emergency Department (ED) and commend the region for having level 2 trained nurses in ED.

N.5. This review notes that National Major Trauma Nursing Group competencies have been adapted to suit the requirements locally however a lack of resource presents challenges to ward staff accessing the training. This review would encourage that nursing staff on the wards are provided appropriate time to complete additional training.

There is strong leadership within the paediatric team, and the review team were impressed with visits to Trauma Units (TU) and Local Emergency Hospitals (LEH) within the network to share learning and gain a better understanding of paediatric capabilities at each site. This enables the MTC to support TUs and LEHs remotely, should a major trauma patient present. The review notes that this ‘roadshow’ is an innovative approach to sharing education within the NoS and would encourage the region to continue to support the regions TU and LEHs in this manner.

While there is no dedicated major trauma ward for children this is normal practice in paediatrics. Patients tend to be cohorted onto one ward, which provides benefit as the multi-disciplinary team can easily locate patients and provide care as required.

N.6. There is no clinical lead for paediatric rehabilitation, and very limited cover for anaesthesia. The review team recognise the resource barriers which exist but would recommend that the region look closely at filling these important posts.

The work of the trauma coordinator input throughout the patient journey is to be commended. Work to integrate children back into a school environment is exemplary.

N.7. With only one paediatric trauma co-ordinator, the region should work to ensure that there is resilience in place should the post holder be absent.

The model of integrating community rehabilitation teams into major trauma service is viewed by the review team as outstanding practice. The interoperability of the community teams visiting the hospital and the rehabilitation staff going into the community provides continuity for the patient throughout their journey.

4.2.4 Trauma Unit and Local Emergency Hospitals

The review team commends the NoS for the development of education roadshows as a great innovative approach to supporting education in the TU and LEHs. The ability to adapt the roadshow to a bespoke session that met the requirements of each TU and LEH was exemplary

practice. The team would encourage that the roadshow continues to adapt and recognise different competencies that are required for emergency department and ward-based care.

The MTC demonstrated that despite the vast geographical area covered by the network, they have close links with the TU and LEHs within the region and there is regular two-way communication which has resulted in the development of clear and concise patient pathways throughout the NoS.

N.8. For the past two years, Dr Grays Hospital, Elgin have been outwith two standard deviations on mortality. The review team would encourage the NoS network to continue to support them in devising an action plan to move within two standard deviations.

4.3 East region

The East of Scotland (EoS) region comprises an adult Major Trauma Centre and a Paediatric Trauma Unit, both co-located in Ninewells Hospital in Dundee. The network links with Victoria Hospital and Forth Valley Royal Hospital these were reviewed as part of the South East Region due to significant overlap.

The network incorporates the territorial Health Board area of NHS Tayside, parts of NHS Fife and NHS Forth Valley, has a mixed urban/rural geography and a population of ~500,000. It manages approximately 8% of all trauma patients in Scotland. Launched in 2018, it has received approximately £3.5m on a recurring basis

4.3.1 Summary

The review team visited the EoS Major Trauma Centre and Paediatric Trauma Unit in March 2024. Walk-rounds of both facilities took place, along with in-person question and answer sessions with local clinicians.

The review team noted that while the relative population served by this region was small, the patients received excellent care. The review recognises that work is required to ensure that Major Trauma is seen as clearly separate from both the emergency department and orthopaedics.

E.1. It is recommended that Major Trauma should be managed as a separate speciality.

Tayside Trauma is a long-established service, and this review notes that work is ongoing which is looking at the provision of consultant-led emergency response throughout the east and south-east of Scotland.

4.3.2 Adult Major Trauma Centre and Rehabilitation

The review notes the excellent leadership within the MTC. The team found that the facilities in resuscitation were well-provisioned, of an appropriate size and supported with robust protocols in areas such as major haemorrhage.

E.2. Trauma team activation in the EoS is currently un-tiered due to the low numbers of trauma cases received by the unit. This is under consideration locally, which is to be commended and the review team recommends that the region completes this review of activation protocols.

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Trauma Team Leader training is recognised as having been of a high-quality, with good engagement from the whole team.

E.3. There is no 24/7 consultant on-site cover in the EoS, and this has been the case since the region was set up. The region do not feel that this presents a significant risk and the review team agree due to the levels of activity. The review would however recommend that this is regularly audited to ensure that all trauma patients who present overnight are seen by a consultant.

E.4. There is also no on-site CT Radiography on a 24/7 basis. The region do not see this as a significant risk, and the review team saw no evidence to suggest that it was. This review would recommend that this is audited in a similar way to 24/7 consultant cover and ensure that time to CT for overnight patients is of an appropriate standard.

CT in Ninewells is located along with theatres and interventional radiology, and not with the emergency department. This necessitates what could be a challenging journey for critical patients. The team in EoS have mitigated this by developing a piece of equipment which allows them to safely move a patient and any associated equipment. The review team wish to commend this innovative approach to managing a challenging problem.

E.5. The review team were pleased to note areas which had been improved in theatre specialities; including an increase in capacity for pelvic surgery, the addition of specialities in orthoplastics and the initiation of rib fixation. This review recommends that the region regularly audit these areas to ensure that patients are being treated in a timely manner.

This review was impressed by the inclusion of specialities including interventional radiology in trauma calls. This is seen as unique and commendable. Onward flow of patients to the major trauma ward is smooth.

E.6. The Major Trauma Ward itself is a well-equipped facility with dedicated spaces for psychology and multiple gymnasia. The review team would like the region to consider how to use the space and facilities to their best advantage. The EoS should consider how to ensure that patients throughout the hospital, who may have traumatic injuries but who have not been identified as trauma patients, can get access to rehabilitation offered within the ward.

E.7. The review team would like the region to ensure that the major trauma service is seen as separate from other specialities. A recommendation is that regular dedicated major trauma morning meetings are held which include all necessary specialities to manage the complex ongoing treatment and care which can be particular to trauma patients.

E.8. The review team notes the passion and the commitment of the rehabilitation team. Particularly impressive was the ability of the team to flex across different specialities and gain engagement across disciplines. This has enabled the rehabilitation need of patients to be met across the hospital. *To further support this practice this review would recommend that outreach from the trauma ward could assist in identifying patients which may potentially have been missed.*

The review team would like to commend the region for the rehabilitation follow-up which takes place within the community which has shown a reduction in referrals to other community teams.

E.9. As acknowledged by the region, there is no rehabilitation consultant in place. The review team recognise that this is not solely a local issue. It is noted that there is work ongoing in the region to examine the specialist rehabilitation model and would recommend that the region consider other models such as appointing a consultant AHP.

E.10. A review of the Medical Model should be carried out to include other specialities, especially those who have shown interest. Sessions should also be reviewed to support the Clinical lead, Operational Lead STAG, Paediatrics and Training and Education to support the 5 facets of Trauma (Prevention, Pre-hospital, Acute, Rehabilitation, Major Incident Planning) and 4 pillars of Trauma (Data & Audit, Education & Learning, Research & Innovation, Clinical Governance)

4.3.3 Paediatric Trauma Unit

The review team were impressed by the paediatric trauma unit and felt that the patient stories demonstrated a strong local understanding of the skills and capabilities within the hospital. It was also noted that strong links between this region and others allowed the EoS to manage complex cases within their capabilities and ensure smooth transfer to the closest PMTC for those outside of these capabilities.

Reviewers commend the psychological services available within the paediatric unit and note that the team providing that service cover the entire hospital.

The addition of funded rehabilitation posts is welcome, and the review looks forward to the excellent existing trauma coordination through reception and the emergency department being extended into this area.

4.4 South East region

The South East of Scotland Major Trauma Network (SEoS) comprises an adult Major Trauma Centre in the Royal Infirmary of Edinburgh, and Paediatric MTC in the Royal Hospital for Children and Young People. The region also links with three Trauma Units (Borders General Hospital, Victoria Hospital in Fife and Forth Valley Royal Hospital), and one local emergency hospital (St John's Hospital) in Lothian.

The network covers a population of ~1.6 million people and receives approximately 29% of trauma in Scotland. It was launched in August 2021 and has a recurring allocation of around £9.5m per year.

4.4.1 Summary

The review team visited the South East of Scotland Adult and Paediatric Major Trauma Centres in late February/early March 2024. Walk-rounds of both facilities took place, along with in-person question and answer sessions with local clinicians.

The South-East is a close-knit team which follows a very patient-centred approach. The enthusiasm and commitment shown by the region was evident from the two-day on-site review, and the team's passion for their work was clear.

A major trauma hospital should be a specialty hospital, and the reviewers commended the team for achieving this with its range of specialties provided. The funding provided by Scottish

Government has gone far in a short space of time and for a relatively new network, it is hitting its milestones much quicker than expected, especially in paediatrics.

The network highlighted its concerns with pre-hospital care and reception, acknowledging that there are issues regarding capacity in the emergency department. There are concerns around clinical exposure and governance, as at present there aren't enough staff to guarantee a RED response by Medic1, when requested by the trauma desk. Despite this, the review team commended the SEoS for endeavouring to provide the service with the resource available. It noted the ongoing work with the wider Scottish Trauma Network and Scottish Ambulance Service to rectify this and acknowledge that this effort is appreciated by pre-hospital colleagues.

4.4.2 Adult Major Trauma Centre and Rehabilitation

There's clear access from the heliport and the ambulance bay, straight to paediatrics or adults and the review team commended the continuous forward movement of patients, which can be difficult to achieve. When the trauma team lead hands over to the anaesthetic teams, there is a thorough process and support available, which was noted for both adult and paediatrics, as the patient moves on their journey.

The STAG workbench and set-up for identifying the patients is to be commended, and the review team acknowledge that there will be a small percentage of patients who will be picked up retrospectively. It is essential to know your trauma population, in order to deliver any type of performance improvement programme and the contribution of the STAG coordinators is key.

The region is performing well in its KPIs, despite an increase in workload, which is a testament to all involved. Collaborative working has been built during the evolution and maturing of the service; and the resources and forums used to do this and discuss multi-injured patients are excellent.

There is good presence of the consultant radiologist in receiving area, which was commended. In radiology there are clear protocols in place, with resident radiology cover, quick decision making and both informal and formal communication taking place with interventional radiology (IR). Imaging takes place in a quick and timely manner. The involvement of the radiologists and the skill set available is a key strength.

SE.1. Access to theatres is good, although the review team gathered that CEPOD time could be restricted and that there was a desire to have more time available. The region should explore methods of increasing capacity in this area.

There was acknowledgement that some specialities were off-site, such as ENT and maxillofacial surgery. As a result, management, planning and coordination could be challenging, especially when emergencies are factored in. Early discussions and conversations are crucial to ensure access to theatres is secured. Movement of electives off-site should be considered to create the capacity needed and support the flow of patients. The review team commended the surgical specialties such as plastic surgeons coming over from St. John's Hospital when needed.

The team highlighted issues around the 24-hour a day, 7 days a week cover for consultant level emergency department Trauma Team Lead. There is a period overnight when there isn't resident consultant cover. The review team were advised that negotiation is taking place to

address the cover. However, during the site visit, members of the review team received a mixed message regarding the status of the ongoing negotiations around cover. In the interim, a 24/7 on-call rota operates with an ST4 and above, and an escalation policy with clear procedures and processes in place.

SE.2. It is recommended that negotiations around 24/7 cover are completed to provide the cover detailed in the minimum requirements.

In major trauma there is a 'consultant of the week' which covers various different specialties. This is in line with the Royal College of Surgeons' recommendations for a multi-disciplinary medical model and this is commended by the reviewers. The allocation of shared speciality cover for the major trauma ward is admirable and the team themselves remarked that they feel well supported.

SE.3. Detailed communication between teams was observed, with a surgical specialties meeting in the morning. The review team thought that a multidisciplinary meeting for all disciplines may be beneficial, perhaps on an ad-hoc basis. Additionally, the MTC should consider holding the morning meeting on Microsoft Teams, which would allow the Trauma Units to join to get feedback on patients who've been transferred to the MTC and close the communication loop. It would allow multiple specialties to come together on a common forum, build connections, and provide an additional education resource for the pre-hospital care teams and Trauma Units.

It was obvious from the emergency department that there was significant learning and training being undertaken within the area, and that this was being provided in a bespoke manner. The presence of a nurse educator at the front door was a great benefit. The major trauma training is a significant step beyond the basic needs and the team applauded this, however it was recognised that there are limitations in the ability to provide staff time to undertake this.

SE.4. In line with recommendations in other regions, the SEoS should endeavour to ensure all staff have appropriate time to complete training.

Rehabilitation is intrinsic to the MTC in the South-East, and the leadership shown by the team is excellent. Having the advanced nurse practitioner and coordinator roles separate seems to work well for the team.

All members of the review team highlighted the excellent management of the non-surgical head injury patients, and how they are grouped mostly in the Department of Clinical Neurosciences (DCN). Patients receive specialist care and have the same access to specialist rehabilitation, which is very admirable.

The input from the mental health nurse team seems fantastic. It is evident that they provide an excellent service both to the patients and to the wider staff team.

The review applauds the bespoke training that has been established, which clearly shows the South-East is addressing the needs from the ward nursing perspective. Additionally, there is a recognition of how the service is working to provide the best training and education to meet the national major trauma nursing group recommendations.

An inclusive and effective education programme is delivered to the wider trauma units and local emergency hospital (LEH), including provision of the appropriate nursing training to ensure a consistent standard for patients. This bespoke approach is admired by the review team.

SE.5. While the service is excellent on the trauma ward, cognisance should be given for the outliers who are on the major trauma pathway but not on the ward itself. The review team encourage the South-East to ensure those outlying patients are reviewed so they get equity of access.

SE.6. Follow-up with patients' rehabilitation was the main concern raised by the review team, and understanding what happens to patients when they go home. The team should focus on how effective rehab can be provided for the 70% of the patients who go directly home and how this could be resourced. Visits to those patients could avoid transfer into community teams and help ensure this cohort of patients get the same access to rehab.

4.4.3 Paediatric Major Trauma Centre and Rehabilitation

The facilities in place at the new site are admirable; a lovely, bright hospital environment. The paediatric team has its own identity and its own processes, but support is available as required from the adult service. A mutual agreement is in place with the MTC, to help plug any delay it would take for the paediatric consultants to come in.

Additionally, the safety netting around the pre-alert for paediatric cases out-of-hours is impressive as it allows a bit more time for the consultants to get in, to deliver the consultant-led care.

Patients are well-coordinated all the way from resuscitation through to rehabilitation, with the trauma coordinators being a conduit holding the journey together. Communication and governance is very inclusive and is highly commended.

The South-East has exemplary rehabilitation facilities and a truly collaborative approach around the patient, as well as having psychology services incorporated as part of this which is commended. In paediatrics, the team work in a collaborative and holistic manner to focus, not only on the patient, but on their wider family. The Ronald McDonald house is exemplary in this respect.

In paediatrics, there is a clear process through the emergency department and MTC ward to provide bespoke education and training for nursing colleagues, outreaching as required. There was, however, a concern raised by staff, about the availability of time to continue their education to provide the best for their patients.

The review team recognise that there is a challenge with dietetics, and a lack of dedicated cover in what is acknowledged is part of the essential service.

It was noted that there is great work ongoing with some follow-up visits with patients, where they are brought back to allow continuity of care. Additionally, the team welcome community therapists to the site for first meetings to help with cross-over, which promotes a seamless patient journey.

SE.7. The review team encourages the SEoS to consider what could be done to enhance this service and share expertise with the Trauma Units. The skills and the experience at the central site could be well shared with other centres to improve learning throughout.

4.4.4 Trauma Units and Local Emergency Hospital

There's clear and mutual respect between the MTC and the Trauma Units (TU), with the sites working well together and great links in place between the nurse educators and the TUs. There is positive engagement from the units with the wider network, utilising opportunities for shared learning.

The review team commended the units' analysis of STAG data to understand what their challenges were, and the subsequent plans drawn up to address these.

Borders General Hospital showed initiative in honing their skill set to meet the demands of the 113,000-strong population. The team recognise that 59% of their trauma patients are over 65 and 23% are over 80. To best serve this population, the team utilise the Heartlands Elderly Care Trauma and Ongoing Recovery (HECTOR) course to help develop the skills of their staff to provide bespoke care for patients. The review team was also impressed with the weekly multi-disciplinary team meeting held to review major trauma patients, which is attended by clinicians in general surgery and orthopaedics along with rehabilitation coordinators.

While Borders General Hospital was not able to have an emergency department consultant available within 30 minutes, the site has put in place appropriate mitigation, with a surgical and anaesthetic consultant in place to provide cover.

In Forth Valley, the rehabilitation coordinators are key to the pathway and provide an excellent service. The presence of the specialist rehabilitation unit (SRU) at Bellfield Centre nearby in Stirling, means there is limited resource for rehabilitation provision at the Forth Valley TU itself. The review team is aware of the ongoing concern regarding medical cover at the Bellfield Centre, and the TU's plan to recruit a GP with a specialist interest in rehabilitation.

At Victoria Hospital in Kirkaldy, the team had previously carried out quality improvement activity, and a retrospective audit which informed them of which rehabilitation services trauma patients accessed. Using their findings, they have built great links with third sector organisations and the local council sport and leisure teams. By working with council-run facilities, exercise can be prescribed as part of the rehabilitation journey which the review team commended. The TU is able to 'give lives back', helping their patients continue their rehabilitation journey closer to home and return to normality.

The local emergency hospital is St. John's Hospital in Livingston, whose emergency department is open 24/7, with a consultant available between 8am and 11pm.

Its plastic surgery and burn management expertise was highlighted, as was the on-site blood bank. The review panel commended the weekly trauma simulations run for medical and nursing teams.

A significant achievement highlighted by the review team was the chest wall blocks available, and the pathway to determine whether the patients remain or go to the major trauma centre. Having this process available means patients could be managed closer to home. The site also had great patient resources on rib fractures among other things.

Recognition of St. John's nursing training was commended- a bespoke training package is offered with requirements for nursing areas based on who they tend to. They clearly understand patient demographics and there is a clear recognition of the capabilities in the hospital.

5. Conclusions

Overall, the review found that trauma services in Scotland, while still immature, deliver high quality, person-centred patient care. Many examples of excellence and significant achievement were noted by the review panel.

The vast majority of criteria was rated positively (see Graph 2), with 33 instances of 'significant achievements'. No areas were found to have any 'immediate risks'.

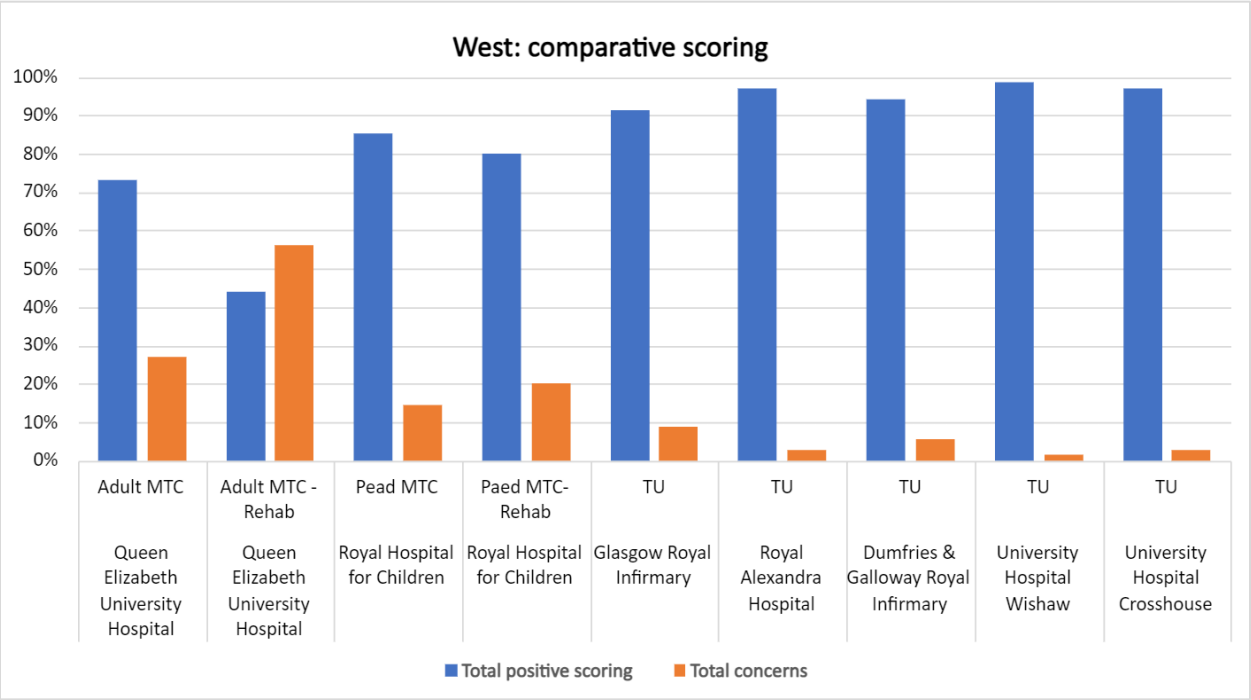
A total of 107 recommendations for improvement were made, which were assigned to either the national network or regional networks to take forward. The recommendations broadly fall into the following categories:

- Education and workforce
- Equity of access
- Quality
- Data and outcomes

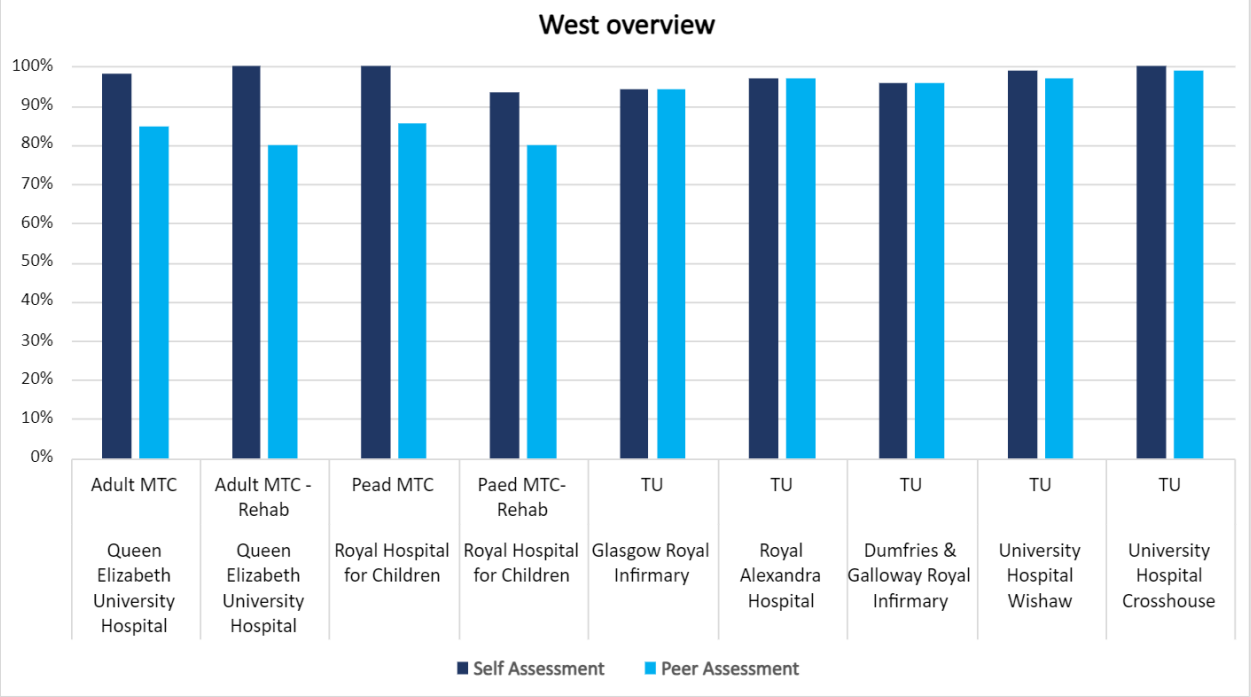
Each region has been provided with a breakdown of findings and recommendations from their area. The four respective regional networks will review and work to implement the recommendations through regional action plans, with national recommendations being taken forward by the STN Programme Team and working groups.

Progress will be monitored at a national level through STN governance as part of its strategic framework.

6. Appendix 1 West region graphs

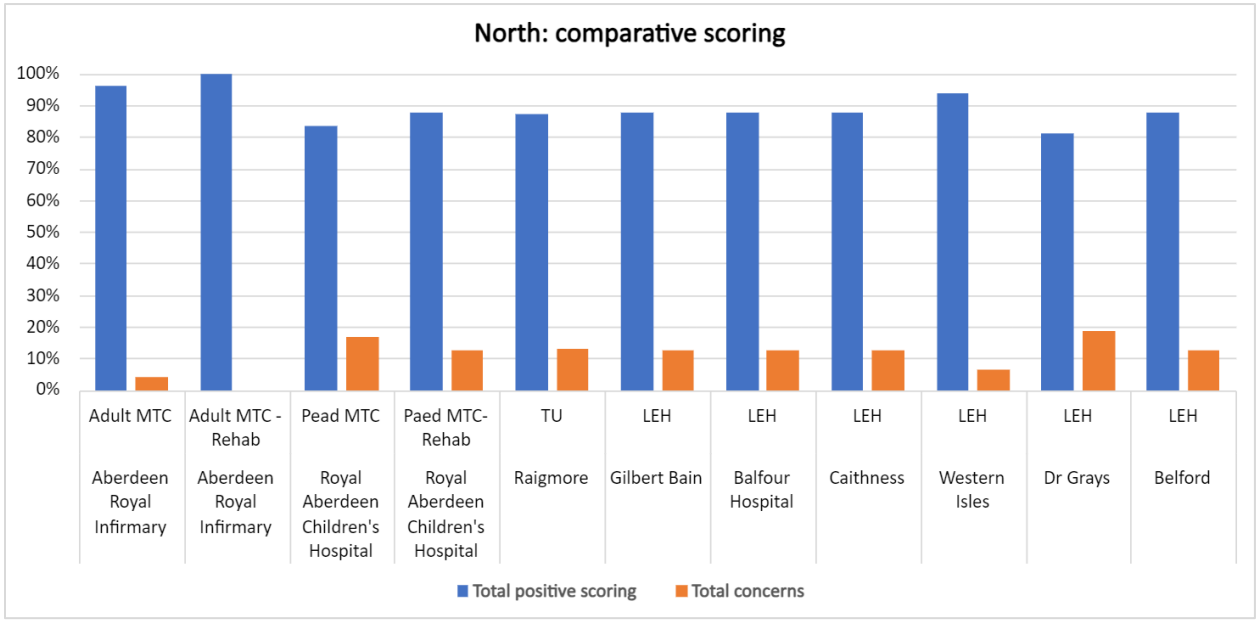


Graph 3 Total positive scoring versus concerns for facilities in the West region

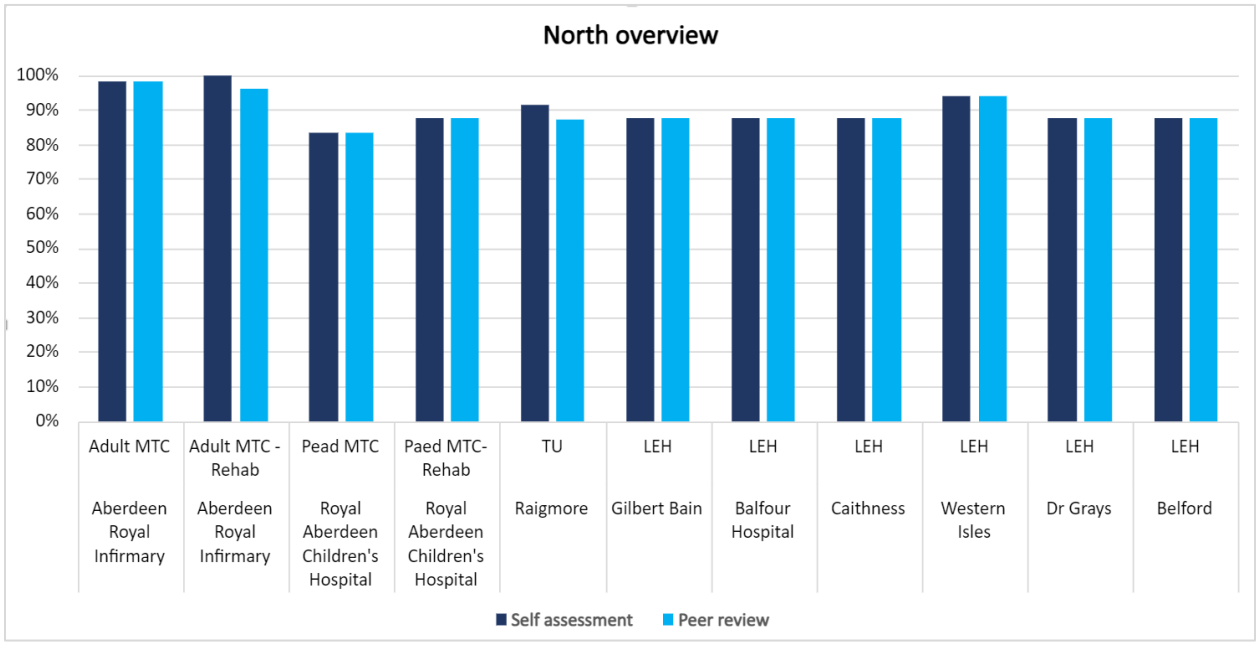


Graph 4 Percentage of criteria met by self-assessment versus peer assessment for West region

7. Appendix 2- North region graphs

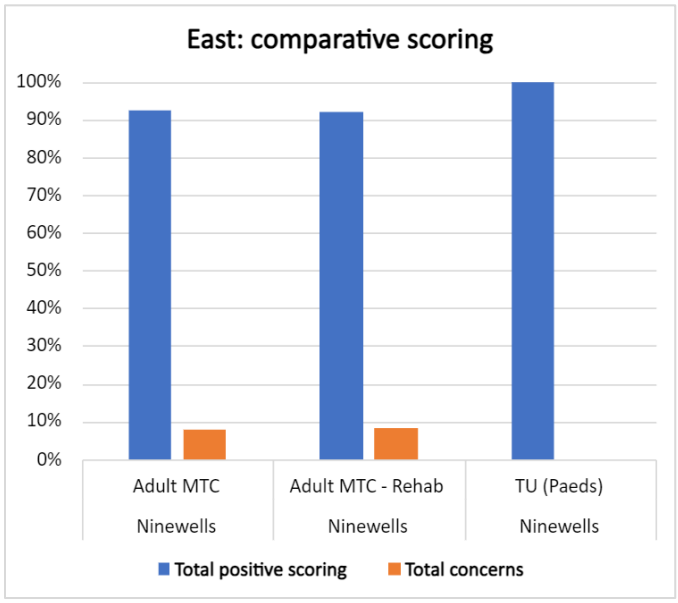


Graph 5 Total positive scoring versus concerns for facilities in the North region

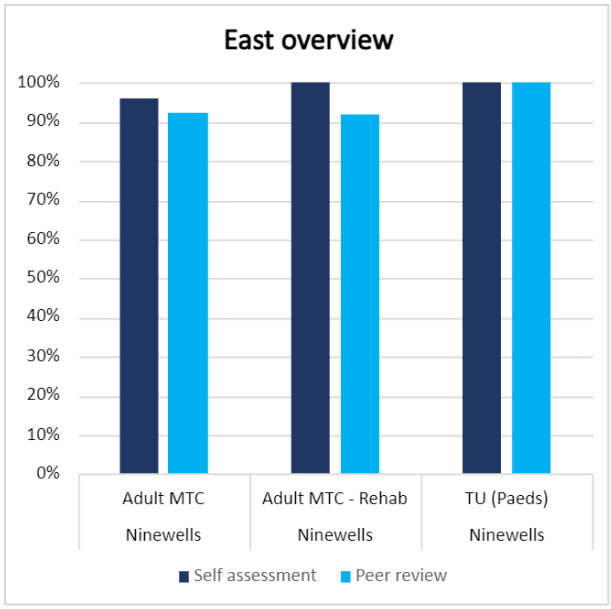


Graph 6 Percentage of criteria met by self-assessment versus peer assessment for North region

8. Appendix 3- East region graphs

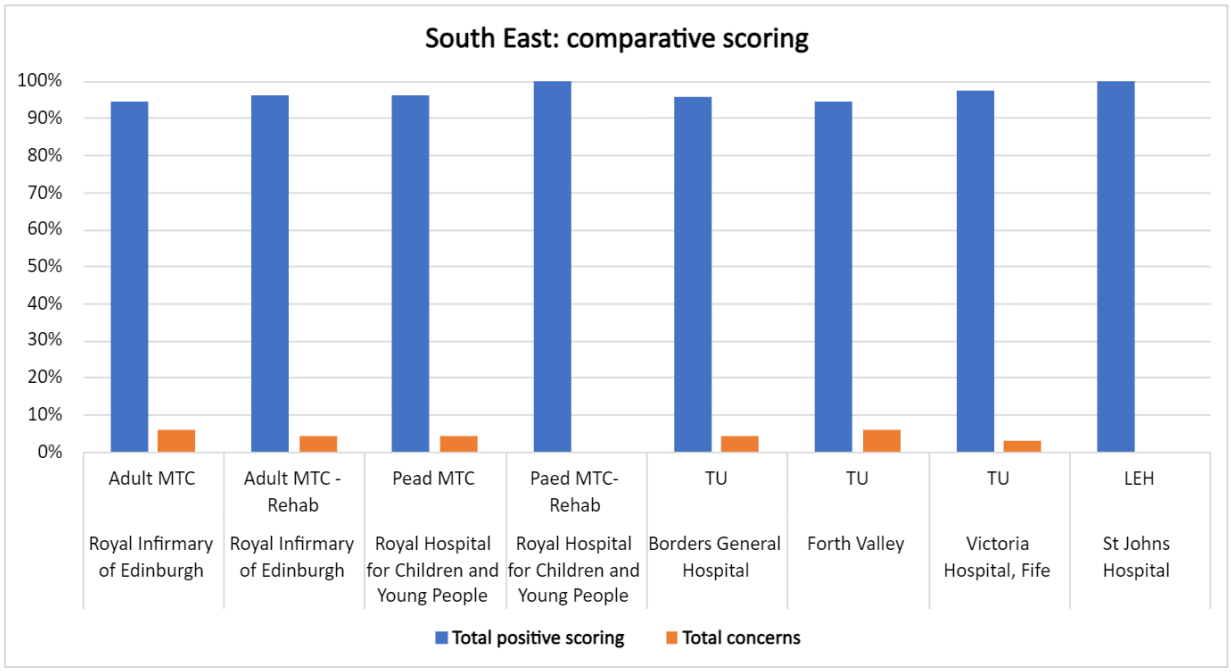


Graph 7 Total positive scoring versus concerns for facilities in the East region

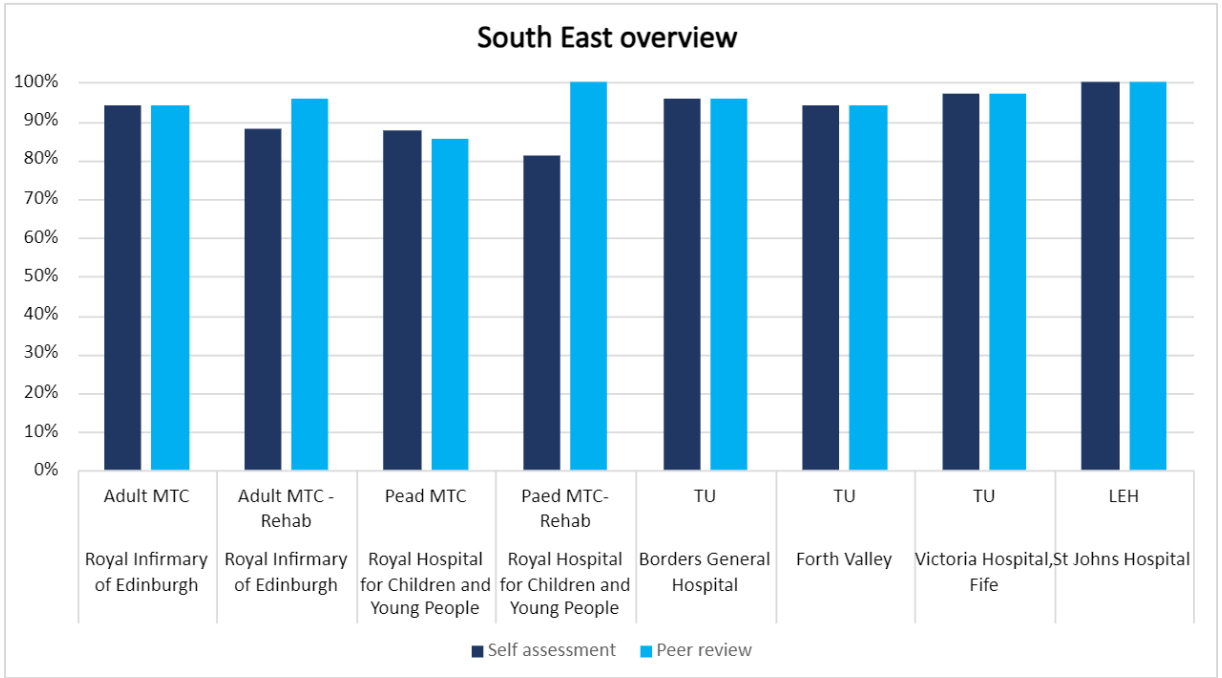


Graph 8 Total positive scoring versus concerns for facilities in the East region

9. Appendix 3- South East region graphs



Graph 9 Total positive scoring versus concerns for facilities in the South East region



Graph 10 Total positive scoring versus concerns for facilities in the South East region

10. Appendix 4 Peer review panel

Members of respective regional panels are indicated by an 'X':

Name	**Role**	West of Scotland	North of Scotland	East of Scotland	South East of Scotland
Robert Bentley	National Clinical Chair for NHSE Trauma Programme of Care	X	X	X	X
Matt Targett	East of England Trauma Network Manager	X	X	X	X
Nicola Robinson	Paediatric Major Trauma Co-ordinator, South Wales Trauma Network	X			
Dean Kerslake	South East of Scotland MTC Clinical Lead	X	X	X	
Rosel Tallach	Trauma Unit Clinical Lead	X		X	
Moira Moulton	East of Scotland Rehabilitation Lead	X			
Lynsay Stewart	Paediatric Major Trauma Co-ordinator		X	X	X
Karen Scott	West of Scotland Rehabilitation Lead		X	X	
Mike Donald	East of Scotland Regional Clinical Lead		X		
Brian Digby	West of Scotland Regional Clinical Lead				X
Donna Patterson	North of Scotland Regional Clinical Lead				X
Laura MacNaughton	East of Scotland AHP Major Trauma Clinical Lead				X
Malcolm Gordon	STAG Chair	X	X		
Nicola Littlewood	STAG Deputy Chair				X

11. Document Storage Locations

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12. Associated Documented Information

Document Ref	Document Title

13. Document Change History

For activation dates, refer to Q-Pulse

Version	Description of Amendments
1.3	Updates to formatting following track changes in v1.2, AGilhooly
1.4	Comments received from SBuchanan
1.5	Final draft version following comments from SBuchanan, comments/track in v1.4
2.0	Version approved at STN Steering Group 22nd August 2024