Major Trauma

**IPG is asked to:**
- Note the progress made towards submission of the business plan
- Note the local implications and feed into local / regional MT groups
- Note the iterative nature of the business plan as more detailed information becomes available

**Synopsis of Paper:**

This is the current DRAFT of the North Major Trauma business plan, including the implementation steps.

This plan recognises the fact that work on MT will serve other patient pathways such as critical care.

The Network element of the plan will be key to improving outcomes for patients and so it is vital that this piece of work is positioned as a regional / national network and not focussed on the MT Centre(s).

Negotiations are currently ongoing to fund a 2 year post to support this work (paper presented at NoSPG in June 2015) and we hope to be in a position to begin recruitment in the very near future.

IPG are being briefed on this work and urged to ensure appropriate representation both at the local and regional meetings.

**Board Representation:**

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<tr>
<th>Name</th>
<th>Role</th>
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<tr>
<td><strong>NHS Grampian</strong></td>
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<tr>
<td>Graeme Smith</td>
<td>Chair, NoS MT Group/Director Modernisation</td>
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<tr>
<td>Lorraine Scott</td>
<td>Service Planning Lead</td>
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<td>Fiona Francey</td>
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<td>Nick Fluck</td>
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<tr>
<td>Susan Carr</td>
<td>Associate Director, AHPs</td>
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<tr>
<td>Amanda Croft</td>
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<td>Annie Ingram</td>
<td>Director of Workforce</td>
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<tr>
<td>David Cooper</td>
<td>GP</td>
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<td>Alastair Cozens</td>
<td>Consultant</td>
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<td>Rod Harvey</td>
<td>Medical Director</td>
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<tr>
<td>Lindsey Mitchell</td>
<td>Medical Workforce Manager</td>
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<tr>
<td>Donna Smith</td>
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<tr>
<td>Carolyn Chalmers</td>
<td>IST Facilitator</td>
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<td>Caesar Zawal</td>
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<td>Martinus Roos</td>
<td>Medical Director</td>
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<td><strong>NHS Shetland</strong></td>
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<td><strong>NHS Western Isles</strong></td>
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<td>Angus McKellar</td>
<td>Medical Director – Corporate Services</td>
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<td>James Myles</td>
<td>Senior Nurse Acute Services</td>
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<td><strong>Scottish Ambulance Service</strong></td>
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<tr>
<td>Andrew McIntyre</td>
<td>Associate Medical Director</td>
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<tr>
<td>Neil Sinclair</td>
<td>Paramedic</td>
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<tr>
<td>Milne Weir</td>
<td>General manager North Division</td>
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Meeting: IPG
Date: 31st August 2015
Item: 20/15
North of Scotland
Major Trauma Network Implementation Plan

Map/Image to be added

Formatting and proofreading will be undertaken once amendments have been made based on addition info/comments on 26th Aug
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3 High Level Major Trauma Pathway
4 Intelligence in Relation to Major Trauma Flow Across North of Scotland (Draft)
5 Summary Report on the 'Modelling of the Proposed Four-MTC Trauma System Configuration for Scotland'
6 Outline of Calculations for Major Trauma Paediatric Activity for Scotland and the North of Scotland
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8 Summary of Key Messages from Patient, Carer & Staff Experience
9 Governance & Reporting for North of Scotland Major Trauma Programme

(Need to cross ref document sections and appendices to ensure correct & reflects contents page)
Executive Summary

“Every person who experiences major trauma receives responsive, high quality, safe and effective person-centred care from the point of first contact through to recovery. The delivery of care will be provided through a robust multi-professional/multi-agency network approach ensuring that care is co-ordinated around the individuals needs. The focus of all professionals and agencies contributing to the individuals care is around maximising clinical/health outcomes, ensuring the best possible experience for individuals and their families/carers, whilst minimising the long term impact and maximising quality of life.”

(North of Scotland Major Trauma Network 2014)

Section to be completed by 26th Aug it will include:

- Introduction and scope of plan
- National Strategy – agreed policy
- Reference to North of Scotland Model & Key/Unique Challenges
- Brief outline of Key actions across NoS pathway for adults and paeds and reference to SAS Business Case
- Resource Requirements – locally and national
- Conclusion
1. Introduction

1.1 Aim and Scope of the Plan

Aim of the Plan is to set out the:

- agreed vision and proposed model of care for North of Scotland region (excluding Tayside)
- current position against standards, key actions and estimated costs for the delivery of the Major Trauma Centre in Aberdeen during 2016
- key actions in developing an effective and efficient NoS major trauma network which delivers the best outcomes for the population (all ages) and the delivery of nationally agreed standards of care as part of a national trauma system. It is anticipated from learning elsewhere this will take approximately three to five years.

1.2 National Context

Each year in Scotland around 5,000 people are seriously injured with around 1,000-1,100 cases being defined as major trauma¹. It is estimated that there are around 100 children seriously injured each year in Scotland. Major trauma is the most common cause of death in under 40 years of age in the UK².

For each trauma death, there are two survivors with serious or permanent disability which significantly impacts on their quality of life. In addition to the human costs, trauma also poses a large socio-economic burden³. Although major trauma is low in frequency and high acuity, it is also by nature unpredictable which can create challenges in efficiently delivering the necessary capacity in relation to responsive and sustainable definitive care.

A number of studies and reports have highlighted deficiencies in trauma care within the NHS in the UK. International evidence shows that a regionalised network approach to major trauma care improves mortality and functional outcomes and is cost-effective. Following the development and implementation of a major trauma change programme in England, the Royal College of Surgeons Edinburgh published a report in May 2012⁴ recommending that optimal reconfiguration of major trauma care for Scotland requires to be agreed which focuses on the general principles of a holistic, inclusive, tiered system which reduces mortality and improves functional outcomes.

In November 2013, the NHS Chief Executives Group endorsed the National Quality Framework for Major Trauma Services⁵ along with the recommendations to establish a single national major trauma system which comprises four regional trauma networks, each with a major trauma centre (MTC) i.e. in Aberdeen, Dundee, Edinburgh and Glasgow. The report setting out the proposals indicates that this is an interim position and that a further review will occur which may result in further rationalisation of the number of MTCs in Scotland – this review is currently underway. These recommendations were signed off by the Cabinet Secretary in April 2014. In December 2014 it was proposed that there should be three paediatric MTCs in Scotland based in Aberdeen, Edinburgh and Glasgow⁶ but this has yet to be agreed.

The fundamental aim of the national major trauma system is to deliver timely safe, effective and person centred care for those who suffer major trauma which achieves the best outcomes by reducing mortality and disability and ensuring individuals are supported to help maximise their quality of life.

1.3 The North of Scotland

i. Geography and Population
The North of Scotland Major Trauma Network covers Grampian, Highland, Orkney and Shetland Health Board areas. This covers a population of approximately 856,940 but this increases to approximately ?? due to tourists and transient work population through agriculture and the oil and gas.

Populations living within Argyll and Bute and Western Isles will geographically benefit from receiving their major trauma care from the West of Scotland Network. We are aware that a small number of MT patients from these geographical areas may continue to access trauma care within the NoS Network and it is key that the network responds appropriately to this.

The NoS has a land mass of 17,997 square miles/46,718 k², which is equivalent to ?? of Scotland’s total land mass. In addition to the expanse of the NoS, there are also some unique functional geographical challenges whereby there are populations and services separated from the mainland by the north sea. ?20% of NoS population live in a remote and rural area.

In addition to the above, trends of the older population within the NoS – waiting info

ii. Major Trauma Population in the NoS
Approximately there are around 119 major trauma cases per year in the NoS. With 100% overtriage rate, effectively the NoS are managing approximately 240 suspected cases within the NoS MT pathway of care. Geographical spread and flow of these patients are outlined in appendix 1.

Within the remote and rural areas, there tends to be a higher rate of accidents due to road, climbing, farming, industrial, fishing and diving within parts of the NoS – need to ensure this is accurate. With this, there also tends to be a seasonal fluctuation, due to tourism.

iii. Specific Challenges within the NoS
The NoS population spread and functional geography creates a number of unique challenges when compared to the central belt model in terms of the provision of responsive delivery of care for the critically injured and critically ill. Key challenges in terms of providing responsive care to remote and rural areas can be summarised as:

• Timely transport and also the provision of this due to adverse weather, particularly for the Islands when air is the only option.
• Communication
• Isolation of staff
• Sustainability of services
• Maintaining the wide breadth of workforce skills and competencies for low volume activity such as MT – again this is critical, particularly for Island patients when only provision available for a number of hours (even days) is that of local hospitals until retrieval occurs.
• Delivery and release from local area to attend education/training can impact on sustainability of service delivery in remote and rural areas.
• Aging and contained workforce, particularly as the younger population tends to migrate to mainland or more urban areas.
• Interdependence of individual services is much greater within the remote and rural areas.
• Local health services fulfil an economic and social role which is fundamental to viability and resilience.

These challenges are unique to the NoS with the exception to Dumfries and Galloway Health Board area.

1.4 Benefits of the Network Approach to Major Trauma Care in the North of Scotland
There are a significant number of benefits which can be gained by having a robust MT network within the NoS. These benefits are outlined below in the context of patient, staff and organisational.

i. Patient/Family Benefits
• Reduction in risk of death from trauma
• Optimal quality of life
• Minimised level of potential disability
• Individuals, families/carers and staff have a positive experience
• Reduction of avoidable harm
• Reduced length of stay and therefore care closer to home as clinically appropriate
• Co-ordinated joined-up, seamless person centred care from time of injury to rehabilitation/ongoing care.

ii. Staff Benefits
• Realisation of the delivery of the above benefits for their patients
• Positive experience in delivering MT care and being part of a network contributing to maximising patient outcomes
• Improved communications and immediate access to decision support when required
• One responsive referral system for their trauma patients to be transferred to TU/MTC as required.
• Improved access to transfer resources within the NoS for critically injured and ill patients.
• Timely repatriation close to home as clinically appropriate.
• Enhanced shared understanding of challenges in delivering MT care locally and across the Network
• Delivery of against agreed standards/KPIs across the various components of the pathway of care e.g. pre-hospital response, transfer rates/timings, pre-alerts, time to CT, time to theatres, rehabilitation prescriptions, successful discharge/repatriation etc
• Improved efficiency of resources across the network e.g. workforce skills/competencies and capacity, education and training etc
• Robust national emergency preparedness for disasters and mass causality incidents
• The delivery against the standards as set out in the National Quality Framework for Major Trauma.
• Patient and staff benefits will also be realised not just for major trauma patients but for other injured and critically ill patients.

iii. Organisational Benefits
• Enhancing patient outcomes and benefits outlined above.
• Staff are supported to deliver and achieve the outcomes as outlined above.
• Delivery against agreed standards/KPIs across the various components of the pathway of care e.g. pre-hospital response, transfer rates/timings, pre-alerts, time to CT, time to theatres, rehabilitation prescriptions, successful discharge/repatriation etc
• Improved efficiency of resources across the network e.g. workforce skills/competencies and capacity, education and training etc
• Robust national emergency preparedness for disasters and mass causality incidents
• The delivery against the standards as set out in the National Quality Framework for Major Trauma.
• Greater service sustainability across the NoS network.
• Patient and staff benefits will also be realised not just for major trauma patients but for other injured and critically ill patients.

1.5 Risks

Key challenges and risks to delivery are outlined below.

a. Activity projections and patient flow is based on the 4-MTC Reconfiguration Model agreed by MTOG but until the national tool is operational there will be a lack of clarity on the true activity and flow across the region and nationally (generic and specialist).

b. Managing the risk of over-triage and under-triage – this is likely to be less of a risk than in other regions due to the patient flow/NoS geography but this will require to be closely monitored.

c. Ability to recruit to specific professional groups due to availability and the lead in time to create different roles to ensure delivery of sustainable care and standards.
d. Uncertainty regarding true funding requirements locally, regionally and nationally until the actions (and options available, specifically around workforce) and the model is fully implemented and reviewed in terms of outcomes.

e. The development and investment in fully integrated major trauma rehabilitation network locally, regionally and nationally will be critical to achieving long term outcomes and flow throughout the network. This will be a significant challenge due to predicted gaps in capacity.

f. Lack of clarity regarding the role of the new Integrated Joint Boards in relation to parts of the major trauma pathway.

g. It is anticipated that there are significant deficiencies in relation to capacity of rehabilitation services across the NoS which will impact on the provision of MT rehabilitation standards which do not comprise other non-MT patient’s care.

h. Tracking of patients across the system regionally and nationally is difficult as there has not yet been an agreed mechanism to do this effectively and efficiently.

i. Successful implementation of the plan cannot be done in isolation from other local and regional linked developments, particularly if we are to improve major trauma care but not to the detriment of non-major trauma patients. The various linkages with other reviews and developments will impact on the speed of this development.

j. Ensuring there are agreed robust cross-network agreements in place between regions regarding geographical population/boundary groups whereby care/treatment is best to be provided by a neighbouring region due to services being closer. Repatriation agreements/protocols also require to be agreed between regions/nationally.

k. Others to be added as this plan is developed and risks are identified.

In order to manage and where possible, mitigate adverse consequences in relation to the current and future identified risks, a regional risk plan and MTC plan will be developed as part of the network governance structure.

References

¹ STAG
⁴ RCS Report 2012
⁵ National Quality Framework for Major Trauma (2013)
⁶ Minutes of MTOG Dec 2014 meeting
⁷ Proposed Four-MTC Trauma system Configuration for Scotland – Dec 2014
⁸ Transforming Trauma Rehabilitation Recommendation for the North East Region

2. Vision and Future Model of Care

2.1 Scottish Governments Vision for Major Trauma Care Scotland

“Our vision is to ensure that people who suffer serious injury are quickly transferred to an agreed trauma site where a specialist multi-disciplinary team, available 24 hours a day will deliver care, which will help ensure they have the best possible outcomes”

The Quality Strategy makes it clear that services should be safe, effective and person centred. Time from injury to definitive care is a primary determinant of outcome in major trauma, not time to arrival in the nearest emergency department. There is compelling published primary literature, and recent evidence from England, which demonstrates that MTC care reduces mortality and improves outcomes, including better functional outcomes.
One third of major trauma patients are currently transferred to more definitive care and there is evidence which shows that the outcomes for patients who are transferred, is worse than those who access definitive care. Ensuring major trauma patients access definitive care first time, wherever possible is clearly best for patients.

The chance of patients surviving major trauma in England has increased by 20% (1 in 5) in the year since the Major Trauma Networks went live in April 2012 (ref). Scotland should aspire to achieving similar results.

2.2 Vision for A Highly Effective Trauma Network for the North

The proposed vision for major trauma care in the NoS is that;

“Every person who experiences major trauma receives responsive, high quality, safe and effective person-centred care from the point of first contact through to recovery. The delivery of care will be provided through a robust multi-professional/multi-agency network approach ensuring that care is co-ordinated around the individuals needs. The focus of all professionals and agencies contributing to the individuals care is around maximising clinical/health outcomes, ensuring the best possible experience for individuals and their families/carers, whilst minimising the long term impact and maximising quality of life.”

The vision and underpinning principles for major trauma care in the NoS are outlined in Appendix 2. These were endorsed by the North of Scotland Planning Group on the 25th February 2015.

2.3 Scope of the North of Scotland Major Trauma Network

The proposed model of MT care in the NoS has four specific roles, these are to:

1. Deliver the agreed NoS vision for MT to reduce avoidable deaths by 20-30%, improve functionality, health and psychosocial wellbeing, thus increasing quality of life.

2. Support each other locally and regionally through the planning and delivery of emergency preparedness for both local Board major incidents and national incidents of mass casualties.


4. Contribute to the function of an inclusive national MT network which both maximises individual patient care and provides the national response to mass casualties.

The network covers the whole pathway of care from prevention to recovery/ongoing care. A high level pathway of major trauma care is outlined within Appendix 3.

2.4 The North of Scotland Model of Delivery for Major Trauma

Outline of Network Model

The proposed model for the delivery of major trauma care within the NoS is based on an inclusive managed care network approach which is collectively responsible for all aspects of trauma care from the point of injury to rehabilitation/ongoing care across the NoS. The delivery of the network includes those delivering and planning major trauma care across the pathway, along with individuals and their families/carers. The key aim is that all services/professionals across the NoS work together to meet the individuals needs regardless of where geographically the injury occurs. The NoS network is composed of local networks and is part of the national trauma system. Whilst each service, unit or local network has responsibility for their clinical governance, members of the network work together to develop and deliver a quality improvement programme across the NoS.

The organogram in figure 1 below aims to provide a pictorial view of the proposed model and the various components and interfaces locally, regionally and nationally.
Every component of the model as outlined in figure 1 has a valuable role and function within the NoS MT Network. The regional network is composed of five distinctive geographical networks (focussed on Board areas) each of which have local networks. Each regional network is made up of a single MTC, one or more trauma units, a number of local emergency hospitals and a number of H&SC partnerships. Supporting the national, regional and local networks are various delivery arms of the Scottish Ambulance Service (SAS). Appendix 4 outlines the specific role, function and definition of each part of the network.

Please note model and underpinning definitions will be reviewed as and when national definitions are produced but with a focus on ensuring these reflect the NoS geographical/population needs.

2.5 Key Features of the Model for an Inclusive North of Scotland Major Trauma Network

The proposed key features which aim to deliver an inclusive trauma network in the NoS are outlined below.

- Incorporates all aspects of the pathway from prevention, pre-hospital care, specialist treatment, rehabilitation/ongoing care and a return to socio-economic functioning.
- All hospitals and providers in the geographical region collaborate to plan, provide and manage the treatment of people who have suffered trauma.
- The network is composed of a number of geographical (local, sub-regional and regional) clinical and, health and care networks which function within the context of the national MT network.
- The NoS network is composed of one MTC, possibly one trauma unit, local emergency hospitals, specialist rehabilitation providers and, local rehabilitation and care providers (statutory and non-statutory). The SAS as a national organisation also provides a number of services which are integral to local, regional and national networks.
• Injured patients across the region are the responsibility of the network and clinicians have responsibility that extends out with their traditional boundaries.

• Integrated multi-disciplinary/agency working across specialist and professional groups.

• Rapid pre-hospital triage, tasking, transfer and retrieval, supported by agreed by-pass and inter-hospital transfer protocols to ensure safe and timely access to definitive care and transfer back to local area for rehabilitation and ongoing care.

• Delivery of trauma care is not to the detriment of other patients.

• Continuous process of system evaluation, research, governance and performance of quality improvement across the network.

• Ongoing training and engagement for all pre-hospital, hospital and community professionals involved in the delivery of trauma care.

• Emergency preparedness and ability to implement a system-wide response to disaster and mass casualty incidents at local, regional and national level.
3. Planning Assumptions & Benefit Measures

3.1 National Planning Assumptions for Major Trauma

The Business Plan is based upon the below agreed national planning assumptions.

a. The implementation of a single national trauma system with local, regional and national components/networks which all contribute to an effective trauma system which delivers the agreed standards and benefits (patient, staff an organisational) as set out in the National Framework for Major Trauma.
b. Formalised systems of trauma care whereby the most complex patient care is centralised into a small number of major trauma centres, improves patient outcomes. Major trauma centres need 24/7 access to fully staffed theatres and diagnostics (CT, MRI and pathology) and comprehensive critical care and neurosurgical support.
c. Modelling of activity is based on the ‘Proposed Four-MTC Trauma System Configuration for Scotland’ report.
d. The activity assumptions as agreed by MTOG require to be based on the 45 minute transfer standard and predicted overtriage rate of 100%. Although the 45 minute transfer standard is ideal, it is acknowledged that this cannot be met for those individuals who are injured in remote and rural areas of the NoS.
e. Delivery of standards as set out in the National Framework for Major Trauma which delivers improved quality and outcomes.
f. The improvement of major trauma care is not at the cost of non-major trauma patients receiving care across the healthcare system.
g. Maintaining key performance targets/standards in services delivering major trauma care.
h. Critical success factors of the national network as outlined below.
i. Timescales for delivery of the national major trauma system is by the end of 2016.
j. Resourcing of regional plans require to be within existing financial capacity where possible, and that any anticipated financial impact be clearly identified as part of the development of regional plans.
k. Organisation of timely and goal focussed rehabilitation is key to the functioning, flow and sustainability of the major trauma network.
l. Cross-boundary agreements whereby patients/populations on the boundary of two regions access services which are closest to them.

3.2 North of Scotland Planning Assumptions

In addition to the above national planning assumptions, the NoS Business Plan has been based on the below assumptions unique to the NoS.

l. Patients for whom the ARI/RACH is their local centre will remain under the care of Grampian for the whole pathway of care unless clinically indicated that care is best delivered elsewhere i.e. national specialist units such as spinal or burns.
m. Populations living within Argyll and Bute and Western Isles will geographically benefit from receiving their major trauma care from the West of Scotland Network.
n. Given the range of services and expertise within Raigmore, trauma patients who can receive definitive care efficiently and is consistent with national standards of care will receive trauma care locally. Trauma patients whom cannot have their full needs delivered within Raigmore will be transferred to the MTC for definitive care.
o. Those patients who are triaged and transported to a MTC who do not require MTC care will receive initial treatment as agreed with the patient and local hospital, prior to being transferred back to the local hospital as soon as safe to do so. This will be based on the services/skills available within remote and rural and Island hospitals given components of moderate trauma care will be delivered by the MTC on their behalf.
p. Due to the geographical spread of the NoS, and the 45 minute standard, it is likely the patient flow will continue as is, with the majority of patients being transferred to their local emergency unit for...
resuscitation and initial care before being transferred to the MTC if deemed appropriate. This may alter if there is a change in retrieval capacity – require advice nationally based on estimated retrieval activity required as set out within 4-MTC Reconfiguration Report.

q. Moderate trauma care and expertise which cannot be effectively delivered within remote and rural hospitals will continue to be referred to trauma unit level hospitals within the NoS and will be encompassed within the NoS trauma network.

r. SAS Business Plan incorporates the SAS key actions and resource implications regarding pre-hospital care, transfer and retrieval and repatriation. – check with Steph/Neil

3.3 Measures for Demonstrating Benefits and Success of the Network

The success of the national network approach will be measured by:

- reduction in deaths (including preventable deaths)
- optimal quality of life
- minimised disability
- individuals, families/carers and staff have a positive experience
- reduction of avoidable harm
- reduced length of stay
- agreed and consistent use of process measures and agreed standards/KPIs across the various components of the pathway of care e.g. pre-hospital response, transfer rates/timings, pre-alerts, time to CT, time to theatres, rehabilitation prescriptions, successful discharge/repatriation etc
- improved communications across the network
- improved efficiency of resources across the network
- robust national emergency preparedness for disasters and mass causality incidents
- the delivery against the standards as set out in the National Quality Framework for Major Trauma.
4. **Activity Assumptions and Modelling**

4.5 **Current Data Sources**

Currently there is no robust activity data available which provides a full understanding of numbers and needs across the major trauma pathway at individual service, organisational, regional or national level. However, we do have two key sources of national data which can be used to guide major trauma service planning and delivery. It requires to be recognised that these data sources have limitations and can only be used as a guide at this time. The remainder of this section outlines the activity data which has been sourced in order to guide this plan. Appendix 5 attempts to summarise the data/intelligence in a high level pathway.

4.6 **Activity Flow Across NoS**

Nationally, MTOG have requested that each region base their regional plans on the notional triage data contained within the ‘Modelling of the Proposed Four-MTC Trauma System Configuration for Scotland’ report led by Mr Jan Jansen. This report sets out the modelling of flow for the first part of the pathway in terms of major trauma numbers and which MTC these individuals would be taken to based on the 45 and 60 minute transfer standard. MTOG have agreed that the national transfer standard direct to an MTC will remain at 45 minutes and that overtriage should be estimated at 100%. A summary of this report and what it means for NoS is outlined in Appendix 6.

4.7 **Paediatric Activity Assumptions**

In relation to paediatrics, there is no source of paediatric MT data within Scotland. In order to inform this Plan from a paediatric perspective, Mr Chris Driver, Consultant in the Department of Surgical Paediatrics at RACH has reviewed paediatric major trauma activity data produced in North West England. Appendix 7 contains the basis for these calculations on a Scotland and NoS basis.

4.8 **Activity Impact on Specialities and Services**

In relation to specialities impacted upon major trauma, the Scottish Trauma Audit Group data from 2012¹ has been used to guide activity assumptions in terms of percentage of major and moderate trauma cases that required input from specialities within the Emergency Department (ED) setting. As can be seen, the level of speciality input varies significantly based on the severity of injury – this is based on national activity reporting. This is outlined on the table overleaf.

<table>
<thead>
<tr>
<th>Speciality/Service Input to Care in ED</th>
<th>STAG Data (2012)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of Major Trauma Cases (ISS =/&gt;16)</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>99%</td>
</tr>
<tr>
<td>Anaesthetics</td>
<td>36%</td>
</tr>
<tr>
<td>Orthopaedics</td>
<td>30%</td>
</tr>
<tr>
<td>Cardiothoracic</td>
<td>4%</td>
</tr>
<tr>
<td>General Surgery</td>
<td>31%</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>8%</td>
</tr>
<tr>
<td>Radiology</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
</tr>
</tbody>
</table>

*Table 1: Percentage of specialities/service input to major and moderate trauma care in ED setting*

STAG data (2012)¹ shows that 4% of moderate trauma and 30% of major trauma cases are transferred from the initial receiving hospital to another STAG hospital or regional centre. Table 2 below outlines the specialist/areas to which patients were transferred to based on severity of trauma. As can be seen, neurosurgery is the most common requirement for transfer.
Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015

| Areas where Transferred Patients From Other Hospitals Were Transferred to. | STAG Data (2012)¹ |
|---|---|---|
| | % of Major Trauma Cases (ISS =/>16) | % Moderate Trauma Cases (ISS 8-15) |
| Emergency Medicine | 1% | 5% |
| Ward | 8% | 55% |
| Intensive Care | 6% | 2% |
| Cardiotoracic | 0% | 1% |
| Spinal Injuries | 16% | 22% |
| Neuro | 69% | 14% |

Table 2: Areas/specialities where major and moderate trauma patients were transferred to for further care

**Trying to see if I can get updated STAG data**

4.9 Rehabilitation Activity Assumptions

There appears to be little or no robust data sources available on major trauma rehabilitation. However, the search on this topic has revealed the ‘Transforming Trauma Rehabilitation Recommendation for the North East Region’¹ document which contains trauma activity data from across the North East England Trauma Network. Appendix 8 crudely extrapolates the data from the North East England report and what this could mean for the NoS with the aims of guiding planning where no other robust source has been identified.

**Are there any other KEY data sources which should be referenced/incorporated in this document?**

**References**

To be added.
5. Improving the Experience of Patients, Carers, Families and Staff

5.1 Experience As A Key Indicator for Success
As highlighted in section 3.3, experience of patients, carers, families and staff is a key indicator for how well a system is operating in terms of meeting needs. In recognition of the importance of this, the NoS Major Trauma Programme had established a workstream to lead on this work with the aims of:

- understanding current experience
- understanding what really matters to patients, carers and families
- providing a baseline for improvement
- informing the plans for improvement across the pathway and network

The development of this plan has been informed by patient, carer/family and staff experience, which we hope is evident. Key messages collated to date are outlined in Appendices 9a-c. A summary of the key messages are outlined in the sections below.

5.2 Methodology
The ‘Experience Based Design’ technique was used to collated patient, carer and staff experience. This consisted of informal interviews using a prompt sheet with a set of questions to gather experience across the whole pathway of care (pre-hospital care to rehabilitation/ongoing care), whilst also teasing out what really mattered to them at each stage.

Individual patients were highlighted by staff caring for them or by staff members coming forward within personal or family experiences. Requests for experience were sought via staff communication mechanism e.g. global e-mails, newsletters and by word of mouth.

Was there a different approach for staff?

Jude - is this accurate? Please amend as you see fit.

5.3 What Have Patients Told Us?
The majority of patients who shared their stories were residents of Grampian with two of the patient stories from Orkney.

The key things which patients told us matters the most across their journey to recovery are outlined below. These are in order of the amount of times these were raise. The two points mentioned by all patients was ‘having their family there’ and ‘regular communication on diagnosis and stages’.

- having family there and around me
- regular communication on my diagnosis and what was going to happen at each stage
- to have a clear plan which I am involved in
- understanding the steps to my recovery – having goals
- getting home
- feeling safe
- getting back to some kind of normality – understanding what that might be and feel like
- having the team of staff around me focussed on my needs
- having patients/people around me who were in a similar situation
- care is co-ordinated by one named person
- getting washed and dressed when I wanted to rather than being dependent on when staff were available
- Access to psychology/emotional support if and when I need it.
Of those major trauma patients who agreed to share their story and experiences, it can be concluded that overall their experience was good, very good or excellent but there was clear evidence of variability of experience across the pathway of care. A number of areas have been highlighted for improvement.

The key themes which were identified are summarised below.

- Overall staff were very caring and ‘fantastic’ but some staff in ward areas were overstretched which compromised communication and care.
- That there are lots of examples of person-centred care e.g. pain management, double appointments for a mother and son, goal focussed steps in preparation for going home e.g. going to supermarket, making favourite foods etc.
- Planning and communication for discharge/transfer was variable with some excellent experiences and for some, less so.
- Having a named nurse or person as a link and co-ordinator was felt would improve experience.
- Keeping a diary of things that happen for the patient and family, particularly in ICU/HDU stages.
- Having people who have similar experiences/trauma around you - helps to talk to others who understand what you are going through.
- For those who accessed the Hydro pool made a big difference in progress.
- Help to fill in forms – someone not directly involved in care.
- That there should be a support group for multi-trauma patients.

5.4 What Have Carers/Family Members Told Us?

The majority of carers who shared their stories were residents of Grampian with two of the carer stories from Orkney.

The key things which carers told us that matters the most across their loved ones journey to recovery are outlined below. An attempt has been made to put these in order of the amount of times these were raise.

- That they were alive and that they could see them.
- Being able to be there with their loved one – difficulties were highlighted around this for those with young families, geographical distance, work commitments etc
- Knowing that he/she has the medical help and care required.
- Having my family and friends around me for support.
- Getting the right and regular information on their diagnosis/condition and what was happening - ideally it should be one person rather than lots of people communicating with you.
- That he/she feels safe and cared for.
- Getting him/her home - knowing the plans for home.
- Know the timescales so I could plan things e.g. for them getting home, for juggling care with the children, work etc.
- Being able to help them, be useful.
- Being able to see what the future might look like and how life will/could change for him/her and us.
- Being surrounded by people in similar situations, who have a mutual understanding of what you are going through.

Of those family members/carers who agreed to share their story and experiences, it can be concluded that overall their experience was good/very good but there was clear evidence of variability of experience across the pathway of care.

The key themes which were identified were:

- Knowing they are alive - getting information on injuries in a non-medical way and being able to see them as soon as possible.
- There was no one person to speak to - information was sometimes piecemeal with lots of people telling me slightly different things.
- Getting information about going home was difficult and would change based on who you spoke to.
- Staff were kind but rushed off their feet - care was not always around the individuals needs.
- Carers and families also need support – no real mechanisms for this.
• Some of the carers have had to change their jobs or hours of work to be able to provide care/support to their loved one – in some cases it has been life changing.
• Having someone to help you in terms of what is available to access for support, finances, help with filling in forms instead of having to struggle and find out everything by yourself.

5.5 What Have Staff from Across the Network Told Us?

There has been a significant amount of formal and informal feedback provided by staff across various professional groups and teams across the NoS network. Key themes from this feedback is outlined below.

• Sometimes we spend far too much time trying to speak to someone about a patients injuries or a transfer. We need one single point of contact which is available 24/7, whenever we need it for decision support and/or referral for transfer.
• Teams/staff from different areas don’t always understand the conditions and challenges each other is working under.
• Time for transfer can take a significant time. There also key challenges if a doctor or nurse has to escort the patient to another hospital as this can deplete staffing in the ward/unit/hospital.
• We don’t always get a pre-alert to let us know a patient is on their way or what their injuries are. This affects our preparation and how we ensure we have the right team ready for this patient.
• Sometimes there is no one person taking responsibility - leading on the patients care.
• Standardised documentation/checklists, pathways and protocols would be helpful.
• Communication across the patient pathway and between hospitals/teams/wards is very variable and poor at times.
• No formal mechanisms for staff support, debriefs or feedback to staff on final outcomes of the patient.
• Dedicated beds for polytrauma patients is required, along with a MDT team and co-ordinator.
• There is no or very little psychological or emotional support for patients.
• Communication with patients and families is not always how it should be.
• There is rarely any joined up discharge/repatriation planning between Aberdeen, local hospitals/communities and the ambulance service. A single team to team discharge/transfer document would also be useful.
• It would be good to have an accessible point of contact for further advise or further information to support teams locally.
• Access to rehabilitation across the pathway is a challenge.
• The provision of ongoing health and social care for patients within ongoing complex needs in the community is a challenge.

Others?

5.6 Limitations and Sensitivities

The numbers of experiences collated are relatively low at around ?13 patient/carers and these are individuals from two Board areas within the NoS.

None of those providing experience were tourists/workers from other countries which are a cohort of those who experience major trauma in the NoS.

A number of individuals have felt that they were not ready or did not wish to share their experiences at this stage as this would be too traumatic.
We had also explored focus groups but no individuals wanted to participate.

**Anything else.**

### 5.7 Key Actions for Embedding Experience in Continuous Improvement

i. Ensure patient, carer/family and staff experience is embedded in the continuous improvement of the delivery of care across the NoS MT Network.

ii. Develop a mechanism whereby opportunities for patient/carers/staff to provide feedback of their experience across the journey is a matter of routine.

iii. Demonstrate and provide feedback to patients, carers/families and staff where experience has changed the pathway/practice and improved the experience for others.

**Anything else**

_Special thanks go to those patients, carers/families and staff who have given up their time to share their experiences and also to Jude, Linda, Jim, Julie and Mhari who have undertaken the interviews._
Key Priorities and Actions for Improving Care and Outcomes Across the Major Trauma Pathway in the North of Scotland

Insert Collage of images portraying the network/pathway
6 Pre-hospital Care in the North of Scotland

6.1 Introduction

Timely access to the right level of pre-hospital skills and expertise is critical in reducing mortality in major trauma patients (ref) wherever they are, but the pre-requisite for this is even more crucial in the NoS, given the geographical and population spread and the time it can take to transfer a patient to definitive care.

6.2 Background

A NoS Pre-hospital, Transfer and Retrieval Group is in place and has explored the various challenges faced by the NoS, developed a high level pathway of care, along with key actions for improving pre-hospital care across the NoS. Each Board area is represented, along with SAS colleagues and specific experts around BASICS and emergency primary and secondary retrieval.

Within the NoS, pre-hospital skills and expertise is provided by a range of statutory and voluntary initiatives (Scottish Ambulance Service, BASICS, WILDCAT, community response teams, others?) which will vary between localities across the NoS.

Although much of the Network plan and focus is around individual major trauma cases, we also require to be mindful of the necessity of planning and delivery of emergency preparedness for both local Board major incidents and national incidents of mass casualties which pre-hospital services and wider agencies have a critical role in. This aspect has also been agreed as one of the areas within the scope of the NoS major trauma network.

The Scottish Ambulance Service (SAS) have a key role within the NoS and the national network in responding, facilitating and tasking the various responses as well as delivering the transfer and retrieval aspect of care. This section links to the separate SAS Business Case for MT (entitled??) which sets out plans for the delivery for:

- implementation of national trauma triage tool
- timely and responsive pre-hospital care
- expansion of the national trauma desk to 24/7 which will filter calls to rapidly identify MT, provide paramedic consultant led pre-hospital decision support to those on the scene and task the most appropriate asset to respond to the individuals needs.
- Transfer and retrieval capacity as per the 4 MTC reconfiguration model, which includes expansion of road and air retrieval capacity across Scotland but also specifically in the NoS.

Steph/Neil – please advise and amend if the above is not accurate and if anything is missing?

6.3 Evidence/Standards
The agreed standards relating to pre-hospital care within the national Quality Framework for MT are outlined in the table below, along with a progress summary in terms of delivery against these.

<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A Trauma Triage Tool should be used to identify major trauma</td>
<td>To be complete by ??</td>
<td>National tool agreed. Implementation due to commence ??</td>
</tr>
<tr>
<td>2.</td>
<td>A paramedic should be available 24/7 in the ACC to identify and co-ordinate the response to MT</td>
<td>To be complete by ??</td>
<td>Contained within the Trauma Desk Business Case produced by SAS.</td>
</tr>
<tr>
<td>3.</td>
<td>A consultant level doctor with extensive pre-hospital experience of the management of Major Trauma should be available 24/7 to advise medically on the best care provision of each patient.</td>
<td>To be complete by ??</td>
<td>Part of business case for trauma desk or required to be provided by region ??</td>
</tr>
<tr>
<td>4.</td>
<td>Pre-hospital services should submit to a national trauma dataset and be included in regular audit</td>
<td>To be complete by during 2016</td>
<td>Part of national KPIs. Led by SAS ?? BASICS already have a data set but input is variable.</td>
</tr>
</tbody>
</table>

**Steph/Neil - please advise re the status/comments re above standards, thanks.**

**Other evidence/standards to be included?**

### 6.4 Specific Challenges, Gaps & Other Relevant Information

In addition to the above national quality standards, H&SCP, NHS Boards and the SAS have a duty to ensure there is robust coverage and delivery of immediate response for any critically injured (or ill) person in their area. This is even more critical and challenging in the NoS due to remote and rural issues as outlined in section 1.3.

Currently there is variability in delivery of pre-hospital care across the NoS, which requires to be further enhanced within partnership/local board areas to ensure responsiveness and sustainability of the necessary skills and expertise. BASICS and Sandpiper Trust are essential in supporting local clinicians in the development and maintenance of pre-hospital skills across the NoS.

NHS Orkney has an excellent pre-hospital community model in place and learning is being shared with other Boards re this. NHS Highland are also due to pilot a pre-hospital care model to support the more remote and rural parts of the Highlands.

There is a significant gap in the availability of easily accessibly decision support for teams on the scene who have local knowledge. This is also linked with the gap in Consultant-Led Pre-hospital Emergency Medicine/Retrieval capacity and skills within this NoS. This chapter is interlinked with chapter 7, which focuses on transfer and retrieval of major trauma cases in the NoS.

There are also challenges around communication across services/agencies which require to be addressed across the pathway of care using some of the technology already available to us.

?Anything else?
6.5 Key Actions for the NoS

The proposed pathway of care for pre-hospital, transfer and retrieval care within the NoS, along with key actions are outlined on page 24. The high level actions underpinning the quality framework and the agreed pathway of care is summarised below. The more detailed plan in terms of actions, timescales, leads and resources are provided on page 25.

Key Actions for Improvement Within Existing Resource

Key actions in relation to ‘pre-hospital care’ which focus on key areas of improvement/redesign within existing resources are:

i. Individual Boards/H&SC Partnerships/SAS and other agencies will continue to support the delivery of responsive and quality pre-hospital care (e.g. training and kit). This will be further supported via the NoS Major Trauma Training and Education Network Plan (chapter 12) which will incorporate a variety of means to support wider opportunities for skill development and maintenance through both existing and new mechanisms.

ii. Formalising the delivery of 24/7 immediate Consultant-level Pre-hospital Decision Support within the NoS for patients requiring trauma unit or MTC care.

iii. Agree the interface between MTC Consultant-level (e.g. Trauma Team Leader) decision support provision and that of the national trauma desk.

iv. Review, agree and monitor protocols with the SAS in relation to tasking of provision of available pre-hospital resources within NoS.

v. Review model and plans/costs for the re-establishment of the Grampian Hospital Emergency Service. This will likely require resources but it is unclear at this stage what that might be.

vi. Review and formalise plans within the NoS, in the context of a national network in the delivery of emergency preparedness for both local Board major incidents and national incidents of mass casualties which pre-hospital services/agencies have a critical role in.

Key Actions for Improvement With Resource Implications

Key actions in relation to ‘reception, resuscitation and initial emergency care’ which focus on key areas of improvement/redesign but which have resources implications are:

i. Key actions within the SAS Business case in relation to pre-hospital care are: Steph/Neil please advise.

6.6 Key Risks

- A number of the actions are dependent on approval and delivery by SAS e.g. use of triage tool, trauma desk, paramedic coverage across NoS, increase in capacity of retrieval/transfer services.
- If adequate increase in capacity for timely transfer and retrieval services does not occur, a refocus of current pre-hospital care will require to be undertaken which will likely require investment, particularly due to the remote and rural parts of the NoS.
- Maintaining skills and expertise, due to geographical and population spread, is essential but will also be a challenge due to numbers of cases. The NoS Major Trauma Training and Education Plan aims to reduce this risk via a variety of means.

6.7 Resource Implications

See SAS Business Case for resource implications for national trauma desk, decision support for on the scene teams, primary retrieval and audit costs.

Individual Boards/H&SC Partnerships with other agencies will continue to support/resource for pre-hospital training/kit as before.

<table>
<thead>
<tr>
<th>Summary of Key Points for Pre-hospital Care in NoS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Appropriate timely access to the right pre-hospital skills/care is an essential part of the pathway of care which can reduce the risk of mortality in major trauma patients. This is particularly crucial in the NoS with the geographical and population spread, along with the travel times across the NoS.</td>
</tr>
<tr>
<td>• The development and improvement of pre-hospital care has been led by the NoS Major Trauma Pre-hospital, Transfer and Retrieval Group.</td>
</tr>
<tr>
<td>• Pre-hospital care is provided by a range of statutory and voluntary initiatives in the NoS.</td>
</tr>
<tr>
<td>• There is variability in delivery of pre-hospital care across the NoS which requires to be addressed by individual Board/partnership areas.</td>
</tr>
<tr>
<td>• SAS Business Case sets out actions for triage, tasking and responses by SAS.</td>
</tr>
<tr>
<td>• This plan builds on a very good pre-hospital care infrastructure by focusing on network approach to formalising protocols, decision support, network plans for education/training and formalising agreeing plans for major incidents and mass casualty incidents.</td>
</tr>
<tr>
<td>• A number of challenges and risks have been identified which the proposed pathway and plans aims to manage/mitigate.</td>
</tr>
</tbody>
</table>

References
Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015

Proposed High Level NoS Pre-Hospital, Transfer & Retrieval Pathway & Proposed Actions for Major Trauma

Timely Assessment & Triage of Trauma
- National Triage Tool to support identification of trauma and transfer to appropriate facility for needs
- 24/7 Trauma Desk filters 999 calls

Right Pre-Hospital Response for Patients Needs
- Immediate tasking of pre-hospital response (local/regional/national)
- Right pre-hospital capacity & skills at the scene:
  - SAS
  - BASICS
  - Enhanced Pre-Hospital Team
  - Community Responders
- Single call for decision support
- Link to trauma desk requirement for other assets

Immediate Tasking of Right Retrieval/Transfer Response
- Immediate tasking of transfer/retrieval assets:
  - SAS Road Response Teams
  - EMRS/ScotSTAR Retrieval/Transfer Teams
  - Search & Rescue
  - RNLI
  - Ministry of Defence
- Single call for referral to hospital
- Timely Pre-Alert
- Single call for 24/7 decision support

Transfer to Right Facility for Individuals Needs
- Pre-alerted with info on injuries and ETA
- Met by Consultant-Led Team (includes expertise as required for patients needs/injuries)
- Standardised handover & documentation

Transfer to Nearest Trauma Unit or Local Emergency Hospital
- Stabilisation until transfer can occur (weather dependent)
- Single call for referrals for hospital transfer
- Single call for 24/7 decision support – ongoing virtual support as required.

< 45mins from MTC
> 45mins from MTC or requires immediate resuscitation

Proposed Actions for Timely Assessment & Triage of Trauma
- Agree national triage tool for both adult & children.
- Establish 24/7 trauma desk manned with right level of expertise.

Proposed Actions for the Right Pre-hospital Response
- Agree protocols for tasking of available pre-hospital resources locally /regionally/nationally both for individual case & mass casualties.
- Clarify response/assets (community responders, BASICS, enhanced teams, SAS teams, search and rescue etc) available across the NoS.
- Appropriate level of training & kit to meet required skills & competencies.
- Establish 24/7 Consultant-level Pre-hospital Decision Support to Trauma Desk & to on-scene team.
- Agree the interface with the 24/7 MTC Consultant-Level decision support /referral service.
- Confirm governance, authority and mechanisms to co-ordinate transfer.

Proposed Actions for the Right Retrieval/Transfer Response
- Establish 24/7 Trauma Desk.
- Expand existing national retrieval service in order to support a timely response for primary and secondary retrieval of MT/non-MT patients (adult & paediatrics) within the NoS to the most appropriate setting for definitive care.
- Establish a single call referral system to appropriate hospital/facility e.g. to organise bed and transport if patient within a trauma unit/local hospital if not initially picked up by trauma desk.
- Establish a standardised pre-alert to receiving hospital.
- Agree & implement a standardised handover tool & documentation.
- Establish 24/7 access to decision support via single call.
### High Level Regional Implementation Plan for the Pre-Hospital Component of Major Trauma Network Plan

<table>
<thead>
<tr>
<th>Ref</th>
<th>Action/s</th>
<th>Measurable Outcomes</th>
<th>Timescales</th>
<th>Geographical Applicability</th>
<th>Lead/s</th>
<th>Indicative Costs</th>
<th>Funding Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>Delivery of Safe, High Quality Responsive Person-centred Pre-hospital Care Across the NoS</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
| 2.1 | Agreed protocols, pathways and governance systems in place across NoS Boards/Enhanced Teams, BASICs and SAS Trauma Desk to ensure timely activation and appropriate tasking of local assets for the individual patient needs. | • Sending right resource first time.  
• Timely response reduces pre-hospital deaths.  
• Appropriate and timely activation of local and national assets/response.  
• Clear governance framework for decision making between assets. | a. Feb 2016 | | NoS/SAS | NoS Lead/A McIntyre | To be advised by SAS/MTOG | |
| | a. Ensure active NoS participation on the National Group taking this work forward. | | | | | | |
| | b. Clarify tasking response/assets (community responders, BASICs, enhanced teams, SAS teams, search and rescue etc) available across the NoS. | | | | | | |
| | c. Agree, implement and review protocols and pathways for pre-hospital care within NoS which support national systems. | | | | | | |
| | d. Agree implement and review governance systems underpinning agreed protocols and pathways which are supportive of agreed regional governance systems. | | | | | | |
| | e. Share and act upon learning locally and regionally from the Highland Pre-Hospital Care Project. | | | | | | |
| | f. Review mechanisms for | | | | | | |
replacement of consumables, provision of oxygen and other equipment replacement.

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<tr>
<td>2.2</td>
<td>Robust mechanisms are in place to provide 24/7 immediate Consultant-level Pre-hospital Decision Support.</td>
<td>Consultant level Pre-hospital Expertise available 24/7.</td>
<td>Feb 2016</td>
<td>NoS/SAS/MTC</td>
<td>To be advised by SAS</td>
</tr>
<tr>
<td>a.</td>
<td>Agree NoS Team for delivery of 24/7 Consultant-level Pre-hospital Decision Support to Trauma Desk, on-scene team and Local Emergency Hospital Teams.</td>
<td>Reduction in inappropriate delays.</td>
<td></td>
<td></td>
<td>To be advised by SAS/MTOG</td>
</tr>
<tr>
<td>b.</td>
<td>Implement a single call system for immediate 24/7 Consultant-led Pre-hospital Decision Support and agree the interface with the 24/7 MTC Consultant-level decision support/referral service.</td>
<td>Reduced risk of pre-hospital mortality/morbidity.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>NoS Consultant Level Pre-Hospital Decision Support Team have authority and mechanisms to co-ordinate transfer and ensure necessary arrangements are in place for receiving hospital/s.</td>
<td>Enhanced co-ordination of right resources.</td>
<td></td>
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<tbody>
<tr>
<td>2.3</td>
<td>Ensure that there is sustainable provision of Consultant-Led Pre-hospital Emergency Medicine/Retrieval Team to all critically ill/injured patients across the NoS, including remote rural areas (links to MIO/national work streams for major incident/mass casualty incidents).</td>
<td>Reduced risk of pre-hospital mortality/morbidity.</td>
<td>?By April 2016</td>
<td>SAS</td>
<td>Costs as per SAS Business Case</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improved equity of access.</td>
<td></td>
<td>SAS Lead</td>
<td>SAS/MTOG</td>
</tr>
</tbody>
</table>

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<tbody>
<tr>
<td>2.7</td>
<td>Review and agree standardised processes and documentation to support the delivery of robust structured</td>
<td>Clear processes.</td>
<td>By end Feb 2016</td>
<td>NoS/SAS/RRHEAL</td>
<td>None identified other than support/time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimises delays in</td>
<td></td>
<td>NoS Lead/SAS Lead</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
| handovers and audit to improve care. | patient pathway.  
- Supports robust audit against outcomes.  
- Enhanced continuity of care. | from colleagues/RRHEAL | 2.8 Review and formalise plans within the NoS, in the context of a national network in the delivery of emergency preparedness for both local Board major incidents and national incidents of mass casualties which pre-hospital services/agencies have a critical role in. | • Clear processes in place for dealing with major incidents/mass casualty incidents and the role of the major trauma network within this.  
• Minimise negative outcomes of such events.  
• Maximise emergency preparedness. | By end Mar 2016 (check timescales) | NoS/SAS | NoS Lead | Not applicable other than local support/time to deliver this. | Not applicable |
7 Transfer and Retrieval in the NoS

7.1 Introduction

Timely access to the appropriate level of transfer and retrieval expertise is critical in ensuring major trauma patients are safely taken to definitive care as soon as logistically feasible. Evidence shows this reduces mortality and has a role in maximising functional outcomes of major trauma patients (ref). This pre-requisite is even more crucial in the NoS, given the geographical and population spread and the time it can take to transfer a patient to definitive care.

7.2 Background

A NoS Pre-hospital, Transfer and Retrieval Group is in place and has explored the various challenges faced by the NoS, developed a high level pathway of care, along with key actions for improving transfer/retrieval care across the NoS. This chapter is interlinked with chapter 6 on pre-hospital care.

Within the NoS, there is inequity of coverage of air asset retrieval with significant gaps in the Highlands and Grampian areas. The island Boards receive an excellent service from the EMRS service but this can be adversely affected by weather – approximately ?? days per year. On these occasions, if appropriate they rely on other agencies such as the Military of Defence and Search and Rescue Services.

The Scottish Ambulance Service (SAS) have a key role within the NoS and the national network in responding, facilitating and tasking the various responses as well as delivering the transfer and retrieval aspect of care. This section links to the separate SAS Business Case for MT (entitled??) which sets out plans for the delivery for the appropriate transfer and retrieval capacity as per the 4 MTC reconfiguration model, which includes expansion of road and air retrieval capacity across Scotland but also specifically in the NoS.

Steph/Neil – please advise and amend if the above is not accurate and if anything is missing?

Any other issues – Pete do you want to incorporate some of your data?

7.3 Evidence/Standards

The agreed standards relating to transfer and retrieval care within the national Quality Framework for MT are outlined in the table below, along with a progress summary in terms of delivery against these.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>5.</td>
<td>MT patients should be taken to a MT centre directly if within 45 minutes travel time.</td>
<td>Not Achievable for all NoS Population</td>
<td>This can only apply for ??% of NoS population due to geography/population spread.</td>
</tr>
<tr>
<td>6.</td>
<td>When necessary MT patients should be transferred without delay to definitive care after initial</td>
<td>To be Complete ??</td>
<td>Time for transfer to TU/LEH can be variable and onward transfer to TU/MTC</td>
</tr>
<tr>
<td>Assessment and optimisation in the ED at the receiving hospital.</td>
<td>2016</td>
<td>Can also be variable/lengthy. Issues with provision of escorts.</td>
<td></td>
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</tr>
<tr>
<td>7. A structured pre-alert should be given to the receiving hospital as early as possible. On arrival at the hospital, a structured handover should be given to the receiving team.</td>
<td>To be completed by end Dec 2015</td>
<td>This happens routinely for paediatrics but more variable for adults.</td>
<td><em>position re structure handover</em></td>
</tr>
<tr>
<td>8. A structured checklist and standardised documentation should be used and included in the patient’s clinical record.</td>
<td>SAS Please advise?</td>
<td>SAS Please advise?</td>
<td></td>
</tr>
<tr>
<td>9. Secondary Emergency Department transfer to a Major Trauma Centre should be provided by an appropriately trained team.</td>
<td>To be completed by 2016</td>
<td>This is variable and creates issues in depleting local unit resources. Links to SAS Business Plan.</td>
<td></td>
</tr>
<tr>
<td>10. Pre-hospital services should submit to a national trauma dataset and be included in regular audit</td>
<td>SAS Please advise?</td>
<td>SAS Please advise?</td>
<td></td>
</tr>
</tbody>
</table>

**Are there any other specific national standards to be added/referenced re transfer/retrieval here?**

### 7.4 Specific Challenges, Gaps & Other Relevant Information

Key points are outlined below.

- The model for enhancing transfer and retrieval is contained within SAS Business Plan – check. Within the GEOS 4 MTC Report it was highlighted that an increase in helicopter capacity is required.
- Unique to NoS, only 7% of patients will be transferred directly to a MTC based on the 45 minute standard.
- Current air asset/ScotSTAR capacity does not cover all of NHS Highland or NHS Grampian but does however cover the Island Boards and the remote areas of NHS Highland.
- There is no dedicated hospital to hospital secondary transfer service which includes appropriate level of escort capacity in the NoS. This is variable and creates issues with service resilience as members of staff are required to accompany critically injured/ill. This is an issue for all patient groups and the risks are being considered by SAS and NoS Board Chief Executives. Anne-Marie/Jim – do you want to add to this? 
- Responsive transfer and retrieval is a particular issue within the NoS, particularly due to a number of factors, time to response due to base in central belt, weather restrictions etc. This is even more critical and challenging in the NoS due to remote and rural issues as outlined in section 1.3.
- *Others?*

### 7.5 Key Actions for the NoS

The proposed pathway of care for pre-hospital, transfer and retrieval care within the NoS, along with key actions are outlined on page 24. The high level actions underpinning the quality framework and the agreed pathway of care is summarised below. The more detailed plan in terms of actions, timescales, leads and resources are provided on page 32.
Key actions in relation to ‘transfer and retrieval care’ are contained within the SAS Business Case submitted separately. Steph/Neil please can you summarise these please e.g. pre-alert, expansion of transfer/retrieval capacity, standardised docs/checklists, audit, etc.

These actions also interlinked with those actions set out in the pre-hospital care within chapter 6 e.g. trauma desk, pre-hospital, provision etc.

Any specific NoS actions?

7.4 Key Risks

- A number of the actions are dependent on delivery by SAS and the wider arrangements agreed for national transfer and retrieval.
- There requires to be an understanding that a larger proportion of patients in NoS compared to elsewhere in Scotland will not meet the 45 minutes standards even with timely access to air assets. The focus is to ensure that as a network those patients outwith 45 minutes of a MTC receive the most appropriate pre-hospital care, timely transfer to the nearest facility who can provide effective resuscitation and stabilisation or definitive care if possible before timely transfer, with the right skills and expertise to definitive care.
- Regardless of responsiveness of national transfer and retrieval services, NoS network will be key in supporting clinicians in remote and rural areas where patients cannot be transferred (up to days at time) due to adverse weather through decision support and maintenance of skills to mitigate/manage risks.
- Need to check event report re any other risks

7.5 Resource Implications

- See SAS Business Case for transfer and retrieval costs.

Summary of Key Points for Transfer and Retrieval Capacity in the NoS

- Appropriate timely access to the right transfer and retrieval skills and capacity is an essential part of the pathway of care which can reduce the risk of mortality in major trauma patients. This is particularly crucial in the NoS with the geographical and population spread, along with the travel times across the NoS.
- % of patients in the NoS cannot reach a MTC within 45 minute standard by land or air.
- The development and improvement of transfer and retrieval care has been led by the NoS Major Trauma Pre-hospital, Transfer and Retrieval Group.
- Transfer and retrieval care is provided by the SAS with variable escort capacity provided by local Boards which creates resilience and capacity issues in local services.
- The current ScotSTAR/EMRS service does not routinely provide a service within large parts of Highland or any part within Grampian. Island Boards receive an excellent service but this can be adversely affected by the weather, requiring local teams to continue the care of these critically injured patients for up to several days. On occasions MoD and SARS teams will support transfer if weather will allow.
- SAS Business Case sets out actions for transfer and retrieval capacity across Scotland in delivering the 4 MTC model of care. Within this plan, there are actions to support the expansion of the current service to equitably cover NoS populations. Is this accurate?
- A number of challenges and risks have been identified which the proposed pathway and plans aims to manage/mitigate.
### High Level Regional Implementation Plan for the Transfer & Retrieval Component of Major Trauma Network Plan

<table>
<thead>
<tr>
<th>Ref</th>
<th>Action/s</th>
<th>Measurable Outcomes</th>
<th>Timescales</th>
<th>Geographical Applicability</th>
<th>Lead/s</th>
<th>Indicative Costs</th>
<th>Funding Stream</th>
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<tr>
<td></td>
<td><strong>Delivery of Safe, High Quality Responsive Person-centred Transfer and Retrieval Care Across the NoS</strong></td>
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<td></td>
<td>Expansion of the existing national retrieval service in order to support a timely response for primary and secondary retrieval of MT patients (adult/paediatrics) within the NoS to the most appropriate setting for definitive care. Key actions are: a. Agree the revised national model in order to deliver the population response (MT/non-MT), mitigate the wider risks for transfer and retrieval highlighted by ScotSTAR and NoSPG for the NoS and the agreed transfer time standards within the NoS. b. Agree the action plan and necessary resource requirements to deliver agreed model. c. Implement and monitor the impact of the agreed model.</td>
<td>• Reduce inequality of access to service for population groups including MT. • Reduce the time to transfer for definitive care. • Reduction in MT pre-hospital deaths.</td>
<td>This needs to be agreed nationally. Agreement to a revised model for the north of Scotland still awaited between ScotSTAR and NoSPG Executive. No timeframe at present.</td>
<td>MTOG/ScotSTAR/NoSPG</td>
<td>SAS Lead</td>
<td>See SAS Business Case</td>
<td>To be identified/agreed nationally as this will affect all regions.</td>
</tr>
<tr>
<td></td>
<td>Agree a nationally standardised and structured pre-alert to MTC/Receiving Hospital for every moderate/major trauma patient. a. SAS deliver Pre-alert for every moderate/major trauma patient. b. Hospitals review mechanisms to</td>
<td>• SAS pre-alert for every moderate/major trauma patient. • Minimise delays in</td>
<td>a. End Nov 2015 b. End Nov 2015 c. End Dec 2015</td>
<td></td>
<td>a. SAS b. All Boards in NoS c. All Boards in NoS</td>
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Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015
| ensure robust systems are in place, (including local communication/switchboards) to receive pre-alert and make subsequent arrangements to pre-alert trauma team | reception of patient.  
• Receiving hospital has right team/logistics ready to receive patient. |  |  |  |
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<tr>
<td>c. Local Emergency Plans reviewed to ensure these support and as appropriate reflect any changes.</td>
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</tbody>
</table>
| Implementation of a single call referral system for arranging secondary transfers regionally to reduce delays, improve co-ordination and efficient use of clinician time. (links to MTC section) | • Reduce delays in patient transfers  
• Improved co-ordination and continuity of care  
• Efficient use of clinical time/expertise. | End Dec 2015 | NoS | NoS Lead/Leads for Each Board  
No additional resource identified – within existing structures.  
Not applicable |
| Review and agree standardised processes and documentation to support the delivery of robust structured handovers and recording of this within patient notes which supports continuity of safe care. | • Clear processes.  
• Minimises delays in patient pathway.  
• Supports robust audit against outcomes.  
None identified other than support/time from colleagues/RRHEAL  
Not applicable |
8. Initial Stabilisation in Non-MTC Hospitals & Continuity of Care

8.1 Introduction

Within the NoS, 7% of the population will not be able to access a Major Trauma Centre or Trauma Unit within 45 minutes as per the national standard. The unique challenges faced by the NoS, dictates the requirement for a highly organised network approach by the various facilities/services. The various components/facilities across the NoS are pivotal in contributing to maximising clinical and health outcomes for the NoS population. This is further expanded within chapter 2 setting out the proposed NoS model of care and the proposed role and function of the various components of the network.

8.2 Background

In the absence of agreed national definitions on the role and function of trauma units and local emergency hospitals, clinicians and managers across the NoS have proposed a set of minimum requirements (see Appendix 4). These will continue to evolve as the NoS and national networks evolve.

In order for these units to appropriately fulfil their crucial role in providing initial resuscitation and stabilisation (as well as rehabilitation as per chapter 10), timely patient access to the right pre-hospital care and to transfer/retrieval capacity (asset and appropriately skills escort capacity) will be key. These aspects are outlined in chapters 6 and 7 and are detailed in the separate SAS Business Case.

8.3 Evidence/Standards

The agreed standards relating to initial stabilisation of MT patients in Non-MT hospitals within the national Quality Framework for MT are outlined in the table below, along with a progress summary in terms of delivery against these. Rehabilitation standards are outlined in chapter 10.

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<tr>
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<tbody>
<tr>
<td>11.</td>
<td>Reception trained trauma team available 24/7 (Skills in damage-control elements of trauma resuscitation)</td>
<td>In Place</td>
<td>For Trauma Unit (TU) and as per NoS definition for Local Emergency Hospitals (LEHs)</td>
</tr>
<tr>
<td>12.</td>
<td>Emergency CT/Radiology available 24/7. (MRI not essential other than in MTC)</td>
<td>In Place</td>
<td>In place for all hospitals currently considered as TU/LEH’s</td>
</tr>
<tr>
<td>13.</td>
<td>Robust Radiology Reporting 24/7. (Radiologists available 24/7 for rapid reporting)</td>
<td>In Place</td>
<td>Where this is not available within LEHs, NoS Network (TU/MTC) will provide this for MT cases.</td>
</tr>
<tr>
<td>14.</td>
<td>Radiology - Teleradiology Facilities. (Compatibility of systems to allow transmission of</td>
<td>In Place</td>
<td>Issue with PACS but this now appears to be resolved.</td>
</tr>
</tbody>
</table>
### 15. 24/7 Access to General Surgery Consultants

(General surgeons should be formally credentialed in trauma surgery)

- **In Place**
- **Within some LEH’s this will be Consultant Level e.g. GPs with general surgery skills.**

### 16. Governance

- **All hospitals receiving trauma patients should have associated governance structures in place**
  - (Scottish MT Network to establish trauma governance framework with mandatory and consistent participation in national audit for adults and children)
- **To be complete during 2016 based on national timescales.**
- **Governance structures are in place but this will required to be reviewed upon the agreement of the Scottish MT Network Governance Structures.**
- **LEHs do not currently contribute to STAG.**

### 17. See rehabilitation standards within chapter 10.

- **See chapter 10**

### 18. For maxillofacial injuries, there is a requirement for both TUs and MTCs to provide round-the-clock consultant-led care with immediate specialist maxillofacial technical support.

- **See chapter 10.**

In addition to the above national standards, the proposed minimal requirements for trauma unit and LEH’s in terms of facilities and skills are set out within Appendix 4.

**Are there any other specific standards to be added/referenced here?**

### 8.4 Specific Challenges, Gaps & Other Relevant Information

Key points are outlined below.

- Due to the geographical challenges and the inability to transfer approximately 80% of patients triaged to MTC care within 45 minutes, the non-MTC hospitals within the NoS MT Network play a critical role in delivery of initial care and resuscitation.
- The proposed NoS model and underpinning definition of role and functions of each component of the Network has only recently been agreed, NHS Highland in particular, requires to further work through what hospitals within their local network due to volume, population and geography will be formally designated as a LEH. Plans on specific requirements relating to this will be produced **when? – Donna please advise.**
- The volume of major trauma patients seen by these hospital teams, particularly LEHs will be relatively low. The Network (TU/MTC) have a key role in providing immediate decision support as and when required by local teams, along with supporting effective and efficient professional development to maintain the necessary skills and expertise (see chapter 11).
- National MT Network structure for governance and quality assurance for non-MTCs is unclear.
- **Others?**
8.3 Key Actions for the NoS

The proposed pathway of care and key actions supporting initial stabilisation and resuscitation within a non-MTC hospital until transfer and retrieval occurs are outlined on page 25. The high level actions underpinning the quality framework and the agreed pathway of care is summarised below. The more detailed plan in terms of actions, timescales, leads and resources are provided on page 37.

Key Actions for Improvement Within Existing Resource

Key actions in relation to the provision of ‘initial resuscitation and stabilisation’ of major trauma patients by non-MTC hospitals which focus on key areas of improvement/redesign within existing resources are:

i. Develop immediate single point for decision support to LEHs as part of local network within NHS Highland and NHS Grampian.
ii. Develop immediate single point for referral (and decision support) by the MTC until transfer to the MTC. Linked to Chapter 9.
iii. Review inter-regional protocols, documentation and contingency plans for resuscitation, stabilisation and onward transfer of patients as per agreed regional pathway of care and standards. Linked to actions in chapter 7.
iv. Monitor any further issues with PACS and escalate these as appropriate.

Key Actions for Improvement With Resource Implications

Key actions in relation to the provision of ‘initial resuscitation and stabilisation’ of major trauma patients by non-MTC hospitals which focus on key areas of improvement/redesign with additional resources are:

i. Support staff across the network to develop/maintain the relevant skills and expertise – see chapter 12.
ii. Given the predicted increase in audit/KPIs, additional audit capacity is required within NHS Highland it is anticipated that ??please advise will be required. ?0.2 band 3 wte in Dr Grays. Due to the small volume of activity in the Islands it is felt this will be absorbed within existing audit capacity and supported by the MTC. MTC capacity will support a co-ordination facility and support the use of the information to provide quality assurance for the networked approach.
iii. Once the proposed NoS model has been fully understood in terms of designation of facilities within NHS Highland and Moray, this may highlight resource implications to support facilities to meet the necessary role and function based on geography, population needs/volume etc. Implications will be communicated to the national MTOG in ??when? – Donna please advise.

8.4 Key Risks

- Where patients will be taken is dependent on the individual paramedics use of the trauma triage tool and his/her level of judgement based on skills and experience.
- Specific requirements for NHS Highland and Moray are not within this plan and require further work-up and anticipated to be available when? – Donna please advise.
The volume of major trauma patients seen by these hospital teams, particularly LEHs will be relatively low. The Network Plan aims to support and reduce/mitigate any current/future risks.

National MT Network structure for governance and quality assurance for non-MTCs is unclear and therefore it is difficult to be clear any specific resource implications.

8.5 Resource Implications

- Cost of audit for non-MTC hospitals is ?? – NHS Highland/Dr Grays to advise
- Costs for network education and training plan outlined in chapter 12.
- Further costs to be worked up and communicated to MTOG in ?? 2016.

### Summary of Key Points for Transfer and Retrieval Capacity in the NoS

- % of patients in the NoS cannot reach a MTC within 45 minute standard by land or air.
- The unique challenges faced by the NoS, dictates the need for a highly organised network approach, requiring every component across the NoS to contribute to maximising clinical and health outcomes for the NoS population.
- The NoS Network has set out a proposed model of care and suggested role and function of the various components of the network.
- Key actions are focussed on single point of access for decision support, referral for transfer to MTC, maintenance of skills and expertise and audit to support local, regional and national quality assurance/governance systems.
- Further work-up of the designation of facilities based on the proposed NoS model and role and function of facilities will occur over the coming months. This may have resource implications – MTOG will be advised of these.
- A number of challenges and risks have been identified which the proposed pathway and plans aims to manage/mitigate.
<table>
<thead>
<tr>
<th>Ref</th>
<th>Action/s</th>
<th>Measurable Outcomes</th>
<th>Timescales</th>
<th>Geographical Applicability</th>
<th>Lead/s</th>
<th>Indicative Costs</th>
<th>Funding Stream</th>
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</thead>
<tbody>
<tr>
<td>3.0 Delivery of Safe, High Quality, Sustainable and Responsive Person-Centred Acute MT Care (Non-MTC)</td>
<td></td>
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<tr>
<td>3.1 Trauma Units &amp; Local Emergency Hospitals across the NoS sustainability deliver resuscitation and stabilisation services to MT patients as per national standards.</td>
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<tr>
<td>a. Develop immediate single point for decision support as part of local networks.</td>
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</tr>
<tr>
<td>b. Review inter-region protocols, documentation and contingency plans for resuscitation, stabilisation and onward transfer of patients as per agreed regional pathway of care and standards. - reception team with right skills and competencies - diagnostics/CT - ongoing care until transfer/retrieval</td>
<td></td>
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<tr>
<td>c. Review local pathways and required skills to reflect any agreed changes e.g. new CT scanner for Orkney.</td>
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<tr>
<td>d. See 1.4 action re workforce skills development/maintenance.</td>
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<tr>
<td>3.2 Trauma Units have mechanisms in place to provide CT within 30 minutes of request and have mechanisms in place to receive CT reporting within 30 mins of scan and ability to share this</td>
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</table>
Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015

| 3.3 | Local Emergency Hospitals whom have CT have mechanisms in place to provide CT as soon as possible and share as soon as possible reports/images to the receiving service/MTC. The delivery or reporting of CT will not delay transfer to MTC if there is significant indications clinically the patient requires transfer. See action 3.4. | Local | Local Board Leads | To Be Confirmed | Local Boards |
| 3.4 | Monitor PACS and highlight any delays in transferring and accessing CT images across the Network | National | ?MTOG | To Be Confirmed | National |
| 3.5 | Single point of contact for referral and decision support until transfer provided by MTC. | Regional | P Bachoo/R Armes | To Be Confirmed | To Be Confirmed |
9. Major Trauma Centre for the North of Scotland

9.1 Introduction

In April 2014, the Cabinet Secretary for Health announced that there would be a national major trauma network which would include four Major Trauma Centres (MTCs); Aberdeen, Dundee, Edinburgh and Glasgow. The national network and the four regions, each with a MTC are expected to deliver the agreed National Quality Framework for Major Trauma during 2016. It was also confirmed that a further review would take place regarding the further rationalisation of MTCs.

This chapter sets out the progress against the nationally agreed standards for MTC for both adults and paediatrics within Aberdeen Royal Infirmary (ARI) and Royal Aberdeen Children’s Hospital (RACH), along with the key plans and resources required for delivery of all standards during 2016.

9.2 Background

ARI and RACH have been providing MT care for many years and welcome the national focus on improving standards and outcomes for patients and the many other benefits which can be maximised by working in a network model regionally and nationally. Aberdeen has been fortunate to have all services and specialities required for delivering optimal MT care on one site and is the regional tertiary hub for a large regional network in the North of Scotland (NoS).

The current national policy presents many opportunities and a number of challenges for delivery but this is felt to be entirely deliverable. It also supports wider sustainability of tertiary services for the population of the NoS along with other key components such as education and teaching. (Need to review/expand on this). There are significant concerns shared by clinicians across the NoS, and particularly within NHS Grampian that any not having an MTC in Aberdeen would destabilise the provision of tertiary level services as many of those providing care to major trauma patients also deliver for non-major trauma patients. This would also significantly increase the number of exceptions and secondary transfers for the NoS population.

Part of the NoS model and network approach for trauma as set out in chapter 2, also supports the resilience of both the regional and nationally in terms of the planning and delivery of emergency preparedness for both major incidents and national incidents of mass casualties.

It is fully recognised that Aberdeen at approximately 119 cases per annum will be a low volume MTC within the national network and plans have been put in place to create increased exposure and maintain trauma skills through regular complex simulation based on each actual major trauma case dealt with which would in effect create MTC exposure to approximately the proposed national 240 volume threshold. Paul – please expand/amend this as you see fit.

The planning for sustainable and optimal delivery of the MTC standards is overseen by the Aberdeen MTC Implementation Group. The Grampian NHS Board have also publicly confirmed support for the formal designation of Aberdeen as an MTC and the NHS Grampian Executive Team endorsed the MTC Implementation Plan at their meeting on the 26th August 2015 (to be confirmed). The Plan will be submitted to the Grampian NHS Board in October 2015 for final sign off.

The general view is that Aberdeen already delivers on the whole very good MT care but this can be variable on an individual case basis (as highlighted by patient/carer and staff experience), and there
are clear areas for improvement. Many of these improvements have or can be taken forward within existing resources/redesign. There are also a number of areas whereby resource is required, but these are on the whole, seen as part of wider service sustainability for all population groups requiring tertiary level care.

A major aspect of the NoS model of care is ensuring a highly organised network approach focuses on the maximisation of clinical and health outcomes for patients across the NoS. Such an approach will require that the MTC supports professionals across the network in the delivery of patient care prior to and after the patient leaves the MTC or remotely for those individual patients who wish to have major trauma care locally. The networked approach has many benefits to patients, staff and the various organisations as set out in section 1.4.

Anything else?

9.3 Evidence/Standards

Due to the number of agreed standards pertaining to the provision of MTC care as set out in the national Quality Framework for MT, progress against these are set out over eight sections.

Do we want to add anything re other evidence?

9.4 Progress and Key Actions for the MTC

The proposed pathway of care and key actions supporting MTC care is outlined on page 54. The progress to date and high level actions underpinning the quality framework and the agreed pathway of care is summarised over eight sections as outlined below. The more detailed plan in terms of actions, timescales, leads and resources are provided on page 55. Where appropriate there will be distinction made between adult and paediatrics if progress/actions do not apply to both. Chapter 11 specifically focuses on the whole pathway of care for paediatric trauma which also supports/links to the MTC part of this chapter.

A number of the actions in this chapter closely interfaces and supports wider actions across the network as highlighted within other chapters of this plan.

9.4i Reception, Resuscitation and Initial Emergency Care

Current Delivery Against the National Quality Framework

Current delivery against the quality framework standards for MTC reception, resuscitation and initial emergency care is summarised in the table overleaf.
Do you disagree with above – any other comments to be added?

Key Actions for Improvement Within Existing Resource

<p>| | | |</p>
<table>
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|   | Trained trauma team available 24/7  
   (consultant-led team, Trauma Team Leader trained in resuscitation to prioritise damage control) | Complete during 2016 | Trauma System in place. Team training being planned via ETC along with regular delivery of a complex simulation programme.  
   Trauma Team Lead (TTL) in place with resident cover provided 8am-00:30am. Plan to increase this to 24/7 during 2016.  
   ED dedicated TTL rota will minimise any negative impact on 4 hour A&E standard. |
| - |   |   |
| 2. | See below section for Radiology standards | See below |   |
| 3. | 24/7 access to on call Consultant General Surgeons  
   (formally credentialed in trauma surgery) | In Place | Training as part of ETC Trauma Team training – awaiting Jan to advise if this is the case or different. |
| 4. | 24/7 Orthopaedics (including sub specialities) | In Place | Dedicated rotas in place for spinal. Work is underway to formalise pelvic rota.  
   A number of Consultants trained in rib fixation and this will be further expanded to provide formalised rota. |
| 5. | Vascular surgeons must be available to treat MT patients 24/7. | In Place |   |
| 6. | Plastic surgery, Maxillo-facial surgery,  
   Urological surgery, and ENT surgery available to attend if required. | In Place |   |
| 7. | Cardiothoracic (CT) Surgery. | In Place | ECMO and warming service available on site. |
| 8. | Senior Trainees Available On Site 24/7  
   & Consultants within 30mins. | In Place |   |
| 9. | Neurosurgery and Spinal Cord Injury - patients with significant head injury be transported primarily to a Neurosurgery Unit collocated with an MTC. | In Place |   |
| 10. | See below section regarding Critical Care standards | See below |   |
| 11. | MTCs must have a written Massive Haemorrhage protocol which ensures the rapid and safe delivery of blood and blood products 24/7 to the ED/Trauma Operating Theatre/Interventional Radiology Suite | In Place for Adults. | Paediatric Protocol underdevelopment and due to be completed 2015 (update requested from Lynn)  
   Plans in place to test resilience of multiple activations across sites are in place. |
Key actions in relation to ‘reception, resuscitation and initial emergency care’ which focus on key areas of improvement/redesign within existing resources are:

i. Continue to evaluate the revised Trauma System and make improvements as required in the activation and response to trauma calls.

ii. Continue to work with SAS and non-MTC units regarding early pre-alerts of potential MT patients to support effective organisation and response of required services within the MTC.

iii. Implement agreed ED Workforce Sustainability Plan funded by NHS Grampian which will support:
   a. the phased delivery of the Trauma Team Leader role from existing cover (8am to 00:30am) 7 days a week, progressing to 24/7 resident cover once full complement of ED consultants have been recruited to. Ongoing recruitment campaign with aim of establishing full compliment during 2016.
   b. the delivery of Consultant-Level Pre-hospital decision support for professionals providing care to MT patients as required via the national trauma desk
   c. the provision of 24/7 decision support to professionals in the non-MTC units and referrals for transfer. (linked to co-ordinator role to support organisation for transfer of patients). Roland/John/Valerie – is action ii a-b accurate?

iv. Agree and evaluate the activation of the Major Haemorrhage Protocol for Paediatrics. Continue with regular paediatric training of paediatric nurses in level 1 transfusion and activation of protocol.

v. Test the resilience of multiple activations of the agreed adult and paediatric Major Haemorrhage Protocols over a short period of time.

vi. Formalise orthopaedic pelvic and rib fixation rotas during 2016. – David is this accurate?

vii. Based on best practice elsewhere, revise, agree and evaluate a single standardised document for the initial part of the MT patient pathway by end of 2015.

viii. Continue to review impact of changes in trainee numbers in the provision on MT and non-MT care.

ix. Anything else?

Key Actions for Improvement With Resource Implications

Key actions in relation to ‘reception, resuscitation and initial emergency care’ which focus on key areas of improvement/redesign but which have resources implications are:

i. Provision of up to date training for trauma team supporting the code red trauma call system. Preferred course is European Trauma Course. Rolling programme with four year refresher. Costs estimated year one and year two at £11,700 for 18 candidates per annum, with an annual cost of £7,800 per annum based on 12 candidates from year three onwards. – is this the right number?

i. General surgeons credentialed in trauma surgery – Jan, please advise if this can/cannot be delivered via ETC.

ii. Develop implement and evaluate a training and education programme which includes frequent complex simulation of ‘actual’ trauma cases to regularly maintain exposure and skill maintenance of acute trauma care across the specialities. Paul – please amend as you see fit. Do we need to initially dedicate someone’s time to this e.g. clinical to lead on this with ongoing admin support?

iv. Development of resilient MTC Nurse Co-ordinator capacity (as part of redesign and expansion of existing nurse team) to support co-ordination of MT patient care and
collation of key information to support KPI’s across the whole MTC pathway interfacing with network colleagues pre and post MTC pathway as required. Estimated cost is £100k – need to check.

v. Anything else?

9.4ii Timely Diagnostic Imaging and Reporting

Current delivery against the quality framework standards for timely diagnostic imaging and reporting is summarised in the table overleaf.

<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Emergency CT available 24/7.</td>
<td>In Place</td>
<td>Further work being undertaken to ensure delivery against 30mins KPI.</td>
</tr>
<tr>
<td>13</td>
<td>Radiology: MRI available 24/7 at MTCs.</td>
<td>In Place from Dec 2015</td>
<td>Wider MRI Plan being implemented which will have this in place from Dec 2015</td>
</tr>
<tr>
<td>14</td>
<td>Radiology Reporting.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Teleradiology facilities.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Interventional radiology available 24/7</td>
<td>#Please advise Shonagh/Lesley - please advise</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Radiology: 24/7 access to CT, U/S, MRI, angiography, IR and access to PACS</td>
<td>In Place</td>
<td>PACS issue now improved. Continue to monitor and escalate nationally as required.</td>
</tr>
</tbody>
</table>

Do you disagree with above – any other comments to be added?

Key Actions for Improvement Within Existing Resource

Key actions in relation to ‘timely access to diagnostic and reporting’ which focus on improvement/redesign within existing resources are:

i. As part of decision support infrastructure for non-MTC units in the NoS, formalise arrangements for providing support and reporting for remote CT/diagnostics for MT patients.

ii. Evaluate the emergency access to MRI and reporting 24/7 from December 2015, on the completion of the NHS Grampian MRI Capacity Implementation Plan.

iii. Anything else?

Key Actions for Improvement With Resource Implications

Key actions in relation to ‘timely access to diagnostics and reporting’ which focus on improvement/redesign but which have resources implications are:
i. Provision of sustainable and emergency access to interventional radiology (IR) 24/7 for MT patients by:
   a. Increase capacity for the Consultant rota for IR:
      • through redesign and service developments as part of the wider radiology team
      • developing a network approach for increasing capacity to manage non-emergency IR demand
      • replace two IR Consultant vacancies and implement plans for increasing establishment to 6 wte – is this accurate?
   b. Increase IR lab capacity and access 24/7 – has this been agreed.
   c. ?actions re paediatrics?

Initial workforce costs estimated at £360k – need to check. Excludes IR lab capacity which I am awaiting costs on.

ii. Create on-call capacity for radiographers to support emergency theatre imaging out of hours – awaiting infor/costs.

Shonagh/Lesley – please advise

9.4iii Theatres & Critical Care

Current delivery against the quality framework standards for theatres and critical care is summarised in the table below.

Do you disagree with above – any other comments to be added?

Key Actions for Improvement Within Existing Resource

Key actions in relation to ‘theatres and critical care’ which focus on key areas of improvement/redesign within existing resources are:

i. Implement a formalised mechanism for early pre-alert for and ICU/HDU bed to ensure minimal delays.

<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.</td>
<td>MTCs must provide 24/7 access to a Critical Care specialist and critical care bed.</td>
<td>To be complete 2016</td>
<td>Plans in place to sustainably deliver critical care demand to all patient groups including MT patients.</td>
</tr>
<tr>
<td>19.</td>
<td>Access to fully resourced separate dedicated theatres</td>
<td>To be complete by ?</td>
<td>Dedicated emergency theatres available. Further improvement work required to streamline processes to maximise emergency access between 8am-8pm. Plans in place to address staffing issues.</td>
</tr>
<tr>
<td>20.</td>
<td>24/7 care from dedicated intensive care consultants.</td>
<td>In Place</td>
<td></td>
</tr>
</tbody>
</table>
Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015

ii. Implement a formalised mechanism for early pre-alert to bleep holder for emergency theatres to ensure minimal delays.

iii. Formalise emergency access arrangements to theatres to ensure minimal delays in access as required during the day. This is linked to the wider theatre capacity plan for elective and emergency theatre demand and capacity.

Mark/Christine/Andy/Brian/Iain - Please advise if this is accurate?

Key Actions for Improvement With Resource Implications

Key actions in relation to ‘theatres and critical care’ which focus on key areas of improvement/redesign but which have resources implications are:

i. Improve the access to staff emergency theatres 24/7 by:

   a. Increase capacity of anaesthetic assistant by 2.5 wte (band 6 with on costs) support in the initial part of the MT pathway whilst the patient is being transferred from ED to diagnostics/theatres and critical care area). Initial cost estimated at £110k per annum plus annual uplift. Mark/Christine – please advise if this is appropriate given our discussions on Friday.

   b. Enhance sustainability of critical care capacity to meet the needs of both MT and non-MT patients by:

      a. In the short term until the redesign of pooled surgical HDU occurs in early 2017 (increasing number of beds to 15, with flexibility to 18), an additional two (for MT) staffed HDU beds are required which will provide flexibility across both level 2 and 3 critical care. This includes predicted MT demand and will equate to approximately £420k per annum for MT. - I am aware that 4 is proposed but not sure we can expect to achieve that via the MT plan??

      b. Increasing the number of staffed ICU beds from 11 to 13, with flexibility to 16. This includes predicted MT demand and will equate to £320k per annum for MT.

Total cost £740k per annum – has this cost for ICU/HDU beds already been funded/committed by NHSG?

Mark/Christine/Andy/Brian/Iain - Please advise if this is accurate?

9.4iv MTC Ongoing Acute Care

Current delivery against the quality framework standards for MTC ongoing acute care is summarised in the table below.

<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>MT patients should be admitted under the care of designated responsible trauma consultants and the service should include a care and rehabilitation coordinator to co-ordinate current and future care and rehabilitation</td>
<td>To be complete ?Dec 2015</td>
<td>Linked to 22. Plans are in place to locate 4 dedicated MT beds for polytrauma patients in a designated area within the trauma orthopaedics ward which has the accommodation and necessary rehab facilities in place. These patients will have a designated Trauma Consultant on for the week, supported by a MDT, includes MTC Nurse Co-ordinator and Rehabilitation Co-ordinator. Demand for beds will be monitored.</td>
</tr>
</tbody>
</table>
22. Co-locate patients with multiple injuries in dedicated trauma wards.  
**To be complete ?Dec 2015**  
Please see 21. **Is the timescale ok – I was thinking it may be helpful to do this prior to winter to help both orthopaedic/wider system**

23. Pain Management: All hospitals taking trauma patients to have a specialist acute pain service.  
**In Place**

24. Appropriate equipment to be available routinely. Care teams to be skilled in using and maintaining equipment.  
**Please advise**  
**Please advise**

25. Individual specialties required to manage injuries will exist in some local hospitals. Where they do not or where there are multiple injuries, clear referral pathways to MTCs must be defined.  
?In Place but under review  
**Please advise**

26. Facilities should exist that allow early definitive fixation of pelvic and long-bone injuries.  
**In Place**

27. Treatment planning and surgery for complex intra-articular injuries should both be performed by an orthopaedic trauma specialist.  
**In Place**

28. Compliance with published standards for the management of open fractures relies on daily access to appropriate theatres that can be staffed simultaneously with both senior orthopaedic and plastic surgeons with the requisite skills to treat these challenging cases.  
**In Place**

29. Definitive planned surgery for amputations should be performed in consultation with rehabilitation and prosthetic services.  
**In Place**

30. The prevention of complications arising from spinal instability or neurological compromise involves all members of the MDT and must begin immediately. If there is significant spinal cord injury, early contact should be made with a spinal cord injury centre for advice and to plan strategy. 
**Linkage required with the Neurosurgery MSN.**  
**In Place**

<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
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</tr>
</thead>
<tbody>
<tr>
<td>31.</td>
<td>Burn care should be managed through the designation of specialist centres, supporting burns units and some local burns’ services. Multi-professional outpatient burns services are essential to ensure optimum ongoing management and outcomes after discharge.</td>
<td><strong>In Place</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>32.</strong></td>
<td>For hand injuries, there must be expertise in microvascular surgery and the management of tissue loss. MTCs should have a combination of plastic surgeons and orthopaedic surgeons in the hand surgery team.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A hand therapy unit, manned by specialist therapists, is fundamental to achieving a good result following hand trauma.</td>
<td>See rehab section.</td>
<td></td>
</tr>
<tr>
<td><strong>33.</strong></td>
<td>For maxillofacial injuries, there is a requirement for both TUs and MTCs to provide round-the-clock consultant-led care with immediate specialist maxillofacial technical support.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td><strong>34.</strong></td>
<td>Traumatic brain injuries should be managed as per published recommendations. Opinions should be sought from neurology and neuroradiology departments, with a clear definition of areas of clinical responsibility among the various neurological specialties.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td><strong>35.</strong></td>
<td>Complex peripheral nerve, such as brachial plexus injuries, should be managed in specialist units.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td><strong>36.</strong></td>
<td>Facilities should be in place in MTCs to provide major vascular and endovascular surgery.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td><strong>37.</strong></td>
<td>Pneumothoraces, chest drains and tracheostomies should be managed in line with published guidelines. There should be 24-hour access to respiratory physiotherapy, including an out-of-hours on-call service.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td><strong>38.</strong></td>
<td>Injuries to the kidney and urinary tract are often complex, and should be identified early and managed in conjunction with urologists, as per published recommendations.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td><strong>39.</strong></td>
<td>In addition to the treatment of injuries, children and older people require specific age-related considerations. Joint care with paediatric or orthogeriatric support is important.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td><strong>40.</strong></td>
<td>Pre-existing medical conditions should be considered, and other specialists involved in care as appropriate. Pre existing co morbidity will be a significant issue in certain age groups and must be managed in conjunction with the appropriate specialty.</td>
<td>In Place</td>
<td></td>
</tr>
</tbody>
</table>
Key Actions for Improvement Within Existing Resource

Key actions in relation to ‘MTC ongoing acute care’ which focus on key areas of improvement/redesign within existing resources are:

i. Implement a formal Trauma Consultant for the week rota who will be responsible for leading and facilitating the care of polytrauma MT patients within the designated polytrauma beds and across the system.

ii. Establish MTC Nurse Co-ordinator Role, Rehabilitation Co-ordinator Role and wider MDT to support Trauma Consultant by the end of November 2015, funding dependent. See next section regarding Rehabilitation Co-ordinator Role and page 43 re MTC Nurse Co-ordinator Role.

iii. Any others?

Key Actions for Improvement With Resource Implications

Key actions in relation to ‘MTC ongoing acute care’ which focus on key areas of improvement/redesign but which have resources implications are:

i. David/Yvonne – please advise what is required to get the proposed bedded area for dedicated poly-trauma beds suitable for use? Should we go for the 5 bedded area to give the flex when required??

ii. Increase staffing by 1 Band 6 or 7, 1 band 5 and 1 band 3 to provide 24/7 cover to dedicated polytrauma beds. David/Yvonne/Claire – please advise based on our conversation on Friday? LS to add cost and bit about annual rotational band 5 post with ?neuro. Need to check with Peter/Claire.

iii. See page 43 re MTC Nurse Co-ordinator Role and interface for transfer/discharge

iv. See rehabilitation section regarding rehabilitation co-ordinator role and gaps in the provision of rehabilitation capacity for dedicated polytrauma beds.

v. Anything else?

Total cost ??k for year 1 and then £??per annum – await info from Yvonne.

9.4v MTC Rehabilitation

Current delivery against the quality framework standards for MTC rehabilitation is summarised in the table below.

<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
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</tr>
</thead>
<tbody>
<tr>
<td>41.</td>
<td>Focus on person centred services:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Clear pathways and protocols to support patients as they move from MT services to ongoing care through rehabilitation to discharge.</td>
<td>In Place</td>
<td>MT pathway in place which is underpinned with a number of protocols. Will be reviewed to understand any gaps.</td>
</tr>
<tr>
<td></td>
<td>Good rehabilitation triage to ensure that complex trauma is properly identified and appropriate care is provided.</td>
<td>To be complete early 2016</td>
<td>Plan in place to provide early screening of rehab needs. Linked to implementation of co-ordinator role.</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>42.</td>
<td>MTCs to provide enhanced rehabilitation services to meet the needs of complex trauma patients.</td>
<td>To be complete during 2016</td>
<td>MT Rehab pathway in place. Plan in place to implement pathway.</td>
</tr>
<tr>
<td>43.</td>
<td>Neuropsychology and Neuropsychiatry: Post-traumatic amnesia screening and monitoring to be routine in all major trauma patients.</td>
<td>To be compete during 2016</td>
<td>Gaps identified. Plan in place.</td>
</tr>
<tr>
<td>27.</td>
<td>Psychosocial &amp; Mental Health care</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>Definitive planned surgery for amputations should be performed in consultation with rehabilitation and prosthetic services. See ??</td>
<td>In Place</td>
<td>See ??</td>
</tr>
<tr>
<td>36.</td>
<td>For hand injuries, there must be expertise in microvascular surgery and the management of tissue loss. MTCs should have a combination of plastic surgeons and orthopaedic surgeons in the hand surgery team. A hand therapy unit, manned by specialist therapists, is fundamental to achieving a good result following hand trauma.</td>
<td>In Place</td>
<td>See ??</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>41.</td>
<td>Pneumothoraces, chest drains and tracheostomies should be managed in line with published guidelines. There should be 24-hour access to respiratory physiotherapy, including an out-of-hours on-call service.</td>
<td>In Place</td>
<td>See ??</td>
</tr>
<tr>
<td>45.</td>
<td>Effective nutritional management is crucial to recovery and rehabilitation following traumatic injury. Policies for nutritional management should be in place in MTCs and local hospitals. Policies for nutritional management of major trauma patients should be in place. NHS Boards have established dietetic service policies and protocols to help them do this.</td>
<td>In Place</td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>Rehabilitation should start as soon as is appropriate after admission, typically in the critical care setting, and continue at the intensity required, and for as long as is necessary, to enable patients to achieve their functional potential.</td>
<td>To be completed by ? 2016</td>
<td>Gaps in capacity identified in ICU and General Surgery. Plan developed to address gaps against the agree pathway of care.</td>
</tr>
<tr>
<td>47.</td>
<td>Rehabilitation co-ordinator role is essential to ensure that patients get all elements of ongoing care that they need.</td>
<td>To be completed by ? 2016</td>
<td>Plan developed to address gaps against the agree pathway of care.</td>
</tr>
<tr>
<td>Action Number</td>
<td>Description</td>
<td>Timeframe</td>
<td>Notes</td>
</tr>
<tr>
<td>---------------</td>
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</tr>
<tr>
<td>48.</td>
<td>There should be an appointment of a Clinical Lead for Acute Trauma Rehabilitation Services in every MTC (Consultant in Rehabilitation Medicine).</td>
<td>To be completed by early 2016</td>
<td>Requires to be formalised. Some capacity provided in MTC but gaps identified. Plan is place to deliver this.</td>
</tr>
<tr>
<td>49.</td>
<td>Every MT patient should receive routine screening of rehabilitation needs.</td>
<td>To be completed by 2016</td>
<td>Plan developed to address gaps against this in the agree pathway of care via the MTC Nurse/Rehab Co-ordinator role.</td>
</tr>
<tr>
<td>50.</td>
<td>A rehab prescription should be provided to all trauma patients with identified needs.</td>
<td>To be completed by 2016</td>
<td>Plan developed to address gaps against this in the agree pathway of care. Testing of rehab prescription/plan already underway.</td>
</tr>
<tr>
<td>51.</td>
<td>Trauma patients should receive appropriate levels of care and rehabilitation at all points along their care pathway.</td>
<td>To be completed by 2016</td>
<td>Key points set out within MTC pathway of care. Plan in place.</td>
</tr>
<tr>
<td>52.</td>
<td>Many trauma patients are of working age, so vocational rehabilitation should therefore be a key component of rehabilitation.</td>
<td>To be completed by 2016</td>
<td>Significant gaps. Plan developed to address gaps against this in the agree pathway of care.</td>
</tr>
</tbody>
</table>

**Key Actions for Improvement Within Existing Resource**

Key actions in relation to ‘MTC rehabilitation’ which focus on key areas of improvement/redesign within existing resources are:

i. Implement the agreed screening tool so every MT patient has their needs screened within the first few days of admission. The implementation of the MTC Nurse and Rehab Co-ordinator roles will be responsible for this.

ii. Implement the agreed rehabilitation prescription/plan and ensure every MT patient has a person-centred goal focussed rehabilitation plan in place. The implementation of the MTC Nurse and Rehab Co-ordinator roles will be responsible for this.

**Key Actions for Improvement With Resource Implications**

Key actions in relation to ‘MTC rehabilitation’ which focus on key areas of improvement/redesign but which have resources implications are:

i. Increase rehabilitation capacity as per identified gaps against the MTC pathway of care and national standards (early routine screening, development/implementation of rehab prescription, co-ordination of input, liaison with local hospital/community teams etc) as outlined below:
   a. Co-ordinator/key worker capacity to support co-ordination of delivery of rehabilitation prescription/plan. (Need to calculate cost for gap identified).
   b. Address gaps in rehab MDT capacity to ensure additional requirements of MT rehabilitation standards are met to maximise recovery and functional outcomes. (Need to calculate cost for gap identified).
c. Increase neuropsychology capacity to meet minimum standards. (Need to calculate cost for gap identified).
d. Vocational rehabilitation as part of MTC rehab delivery . (Need to calculate cost for gap identified).

i. Increase capacity for Consult Rehab Medicine input into the care of MT patients within the MTC as required. (Need to calculate cost for gap identified).

ii. Provide support as required to professionals who are continuing provision of rehabilitation of MT patients when transferred back to local area. (Need to calculate gap/cost identified)

Require to discuss calculations/gaps with Wendy

Total cost ?? per annum.

9.4vi Timely, Safe and Person-Centred Repatriation, Transfer and Discharge Home

Current delivery against the quality framework standards for timely, safe and person-centred repatriation, transfer and discharge home is summarised in the table below.

<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>53.</td>
<td>Organisations and network structures should facilitate follow-up appointments to take place in the most appropriate setting, be this in the MTC, hospital or community. (Mechanisms should be put in place to allow joint follow-up, including the expansion of telemedicine. Local arrangements to be put in place wherever possible)</td>
<td>To be complete ? 2016 (linked to co-ordinator timescale)</td>
<td>This is currently variable. Role of co-ordinator role will reduce this variability significantly.</td>
</tr>
<tr>
<td>54.</td>
<td>A discharge summary describing the patient’s injuries, care received and ongoing needs and plans should be provided at the time of discharge or transfer from a MTC or hospital. This should include a rehabilitation prescription. Standardised documentation and processes for rehabilitation should be developed within a Scottish major trauma system/ service to support patients as they move from MT service to ongoing care through rehabilitation to discharge and beyond.</td>
<td>To be complete 2015.</td>
<td>Plans in place to develop a standardised single team discharge summary for the NoS. Testing of rehab prescription/plan has been undertaken. Link with national rehab sub group.</td>
</tr>
</tbody>
</table>

Key Actions for Improvement Within Existing Resource

Key actions in relation to ‘timely, safe and person-centred repatriation, transfer and discharge home’ which focus on key areas of improvement/redesign within existing resources are:
i. Develop and implement standardised discharge document, along with the agreed processes as set out in the MTC pathway for early ‘shared’ discharge planning. The implementation will be supported by the MTC Co-ordinator roles.

Key Actions for Improvement With Resource Implications

Key actions in relation to ‘timely, safe and person-centred repatriation, transfer and discharge home’ which focus on key areas of improvement/redesign but which have resources implications are:

i. See action re MTC Co-ordinator Role on page 43.

9.4vii Workforce

There are a number of key actions required to support the workforce across the MTC pathway of care. These are outlined below.

- Due to the low volume of major trauma activity, a number of actions have been agreed to mitigate skill loss due to volume, these are:
  o Complex simulation based on ‘actual’ cases for the trauma team, therefore in effect doubling exposure of MT cases in the region of 240 cases per annum.
  o Rotation within and outwith the Scottish Network for members of the trauma team based on identified professional development plans.
- Increasing or refocusing workforce capacity either through redesign or via increase in wte, as outlined in each section.
- Provision of MTC training programme linked to wider quality assurance programmes and evaluation.

Overseeing the Implementation of the MTC Plan

Dedicated Consultant Level Clinical Leadership has been in place since May 2015. Given the breadth of improvement activity set out within this chapter, along with the need to further enhance the MTC interface with the other parts of the network it has been agreed that a senior clinical professional e.g. nurse/AHP should be seconded part time for one year to oversee the improvement programme and further enhance the interface between the network and the MTC. Cost is anticipated to be approximately £0.5 wte of Band 8b/8c based on individual (need to confirm).

9.4viii Governance Across the MTC Pathway

Current delivery against the quality framework standards for governance is summarised in the table below.
Key Actions for Improvement With Resource Implications

Key actions in relation to governance and quality assurance but which have resources implications are:

i. Increase in audit capacity to meet increase in audit/KPI requirements across the MTC pathway which also will create greater resilience. Cost £35.7k (0.8 wte band 6). The role will provide capacity to provide further co-ordination on a network level working with existing audit colleagues across the Network and support the use of data via MTC and network quality assurance structures.

9.5 Key Risks

- In delivering reception, resuscitation and initial emergency care section there are a number of actions which are dependent on a network approach or teams external to the MTC e.g. SAS in delivery of appropriate pre-alert notifications, trauma desk etc
- Recruitment of certain Consultants posts e.g. ED and IR
- Activity projections and patient flow is based on the 4-MTC Reconfiguration Model agreed by MTOG but until the national tool is operational there will be a lack of clarity on the true activity and flow across the region and nationally (generic and specialist). Managing the risk of over-triage and under-triage – this is likely to be less of a risk than in other regions due to the patient flow/NoS geography but this will require to be closely monitored.
- Ability to recruit to specific professional groups due to availability and the lead in time to create different roles to ensure delivery of sustainable care and standards.
- Uncertainty regarding true funding requirements locally, regionally and nationally until the actions (and options available, specifically around workforce) and the model is fully implemented and reviewed in terms of outcomes.
- The development and investment in fully integrated major trauma rehabilitation network locally, regionally and nationally will be critical to achieving long term outcomes and flow throughout the network. This will be a significant challenge due to predicted gaps in capacity. This section outlines the MTC gaps and actions.
- Lack of clarity regarding the role of the new Integrated Joint Boards in relation to parts of the major trauma pathway.
- Tracking of patients across the system regionally and nationally is difficult as there has not yet been an agreed mechanism to do this effectively and efficiently.
• Successful implementation of the plan cannot be done in isolation from other local and regional linked developments, particularly if we are to improve major trauma care but not to the detriment of non-major trauma patients. The various linkages with other reviews and developments will impact on the speed of this development.

9.6 Summary of Resource Implications for MTC

Yet to be added.

<table>
<thead>
<tr>
<th>Summary of Key Points for MTC in the NoS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• National policy is to develop a national trauma network which includes 4 MTCs i.e. Aberdeen, Dundee, Edinburgh and Glasgow.</td>
</tr>
<tr>
<td>• MTCs require to demonstrate delivery against the standards as set out in the National Quality Framework for Major Trauma by the end of 2016.</td>
</tr>
<tr>
<td>• A large number of the standards are currently being delivered. The document highlights those which are not currently being delivered and the key actions to deliver these during 2015 and 2016. A number of these actions will be delivered through redesign/improvement but a number require resources to support delivery – some of which are already in place by NHS Grampian as part of ensuring wider service sustainability.</td>
</tr>
<tr>
<td>• Key areas requiring resources are; trauma team training, interventional radiology, critical care, co-ordinator roles, staffing of dedicated beds, audit capacity and rehabilitation capacity.</td>
</tr>
<tr>
<td>• Other key points</td>
</tr>
</tbody>
</table>
Proposed High Level Pathway & Key Actions for the Aberdeen Major Trauma Centre

### Pre-Reception Phase
- Early pre-alert to MTC by TSA re injuries & ETA.
- Referral from other hospital to MTC via a single call.
- Initiate trauma call based on anticipated level of response required.
- Trauma Co-ordinator pre-alerts radiology, theatres, ICU/HDU, BTS as appropriate.
- Decision support provided to the hospital/triage team as required via single call.
- Activation of ‘code red’ immediate transfusion as required.

### Reception & Initial Assessment/Treatment Phase
- Trauma team briefed & ready to receive patient by Trauma Team Leader.
- Structured handover of patient by referring team.
- Initial assessment, treatment and agreed management plan recorded in agreed trauma document.
- Trauma Co-ordinator organises/alerts teams & services required to deliver agreed management plan.
- Appropriate activate major haemorrhage protocols.

### Critical Care & Emergency Diagnostics & Interventions
- Transferred to ICU/HDU based on clinical needs.
- Initial screening of rehabilitation needs.
- Patient as required transferred asap to:
  - Non-invasive diagnostics e.g. CT/MRI, ultra-sound
  - Interventional Radiology
  - Emergency theatres

### Ongoing Acute Care & Rehabilitation
- Multi-system trauma patients cared for in dedicated major trauma bed staffed by a 7 day Consultant-Led MDT for the provision of ongoing acute care. Patient with single system trauma receive same level of care on specialty ward based on their needs.
- Daily MDT Ward Rounds with specialist rehabilitation/Consultant in Rehabilitation Medicine input as required.
- Screening of individuals needs & delivery of rehabilitation plan/prescription.
- Discharge needs to be shared with multidisciplinary input to management plan.
- Diagnostics and further surgical requirements delivered as required.
- Early pre-alert to GP/community/hospital receiving team as appropriate.
- See joint discharge planning section.

### Transfer to Community Setting
- Home, residential setting or community hospital.
- See joint discharge planning section.
- Repatriation/discharge within 48 hours of confirmed clinically fit for transfer.
- Rehabilitation care plan.
- See Community Re-integration section in Rehabilitation Pathway.

### Specialist Rehabilitation, Inpatient Care (level 1 or 2)
See Proposed High Level NoS Rehabilitation & Repatriation Pathway.

### Proposed Actions for Joint Discharge Planning
- Single point of contact for hospital care & specialist rehabilitation.
- Develop MT Co-ordinator capacity to facilitate care based on individual needs.
- Develop ‘76 staffed dedicated major trauma beds for patients with multi-system trauma.
- Develop adequate MDT rehabilitation capacity for 7 day cover.
- Develop daily MDT/specialty ward round with Consultant in Rehabilitation/Medicine input.
- Appropriate pre-admission screening tool & who is responsible for undertaking this.
- Agree joint discharge/rehabilitation protocol/SOP.
- Utilise e-health solutions to support ongoing care as required.

### Transfer to Community Setting
See joint discharge planning section.
- Rehabilitation/discharge within 48 hours of confirmed clinically fit for transfer.
- Rehabilitation care plan.
- See Community Re-integration section in Rehabilitation Pathway.

### Proposed Actions for Ongoing Acute Care/Rehabilitation
- 7 day Consultant-Led team to co-ordinate & deliver ongoing acute care:rehabilitation.
- Develop sustainable MT Co-ordinator capacity to facilitate care based on individual needs.
- Develop sustainable immediate access to interventional radiology.
- Develop plans for delivery of 24/7 MRI by end of 2015.
- Implement agreed early pre-alert for theatres to minimise delay in access to emergency theatres.
- Review scheduling/capacity of theatres to minimise delays.
- Review and formalise arrangements for second on-call team for theatres overnight.
- Increase numbers of theatre staff who can operate cell salvage kit.
- Formalise mechanism for early pre-alert for ICU/HDU bed.
- Implement plans to increase critical care staffed bed capacity.

### Proposed Actions for Joint Discharge Planning
- Single point of contact for hospital care & specialist rehabilitation.
- Develop MT Co-ordinator capacity to facilitate care based on individual needs.
- Develop mechanism for joint multi-agency joint discharge planning (including transport).
- Develop & agree a single document for discharge/transfer of care.
- Develop & agree discharge/rehabilitation protocol/SOP.
- Utilise e-health solutions to support ongoing care as required.

### Critical Care & Emergency Diagnostics & Interventions
- 7 day Consultant-Led team to co-ordinate & deliver ongoing acute care:rehabilitation.
- Develop sustainable MT Co-ordinator capacity to facilitate care based on individual needs.
- Develop ‘76 staffed dedicated major trauma beds for patients with multi-system trauma.
- Develop adequate MDT rehabilitation capacity for 7 day cover.
- Develop daily MDT/specialty ward round with Consultant in Rehabilitation/Medicine input.
- Agree joint discharge/rehabilitation protocol/SOP.
- Utilise e-health solutions to support ongoing care as required.

### Effective and Timely Co-ordination of Care/Audit Against Agreed KPI’s
- Establish 24/7 Consultant-Led Trauma Team and formalise Trauma Team Leader role.
- Agree system/protocol for pre-alert and standardised handover & documentation by SAS.
- Ensure consistent mechanisms for receiving/activating code red - Develop immediate access (ongoing as required) to decision support or referral via single call system.
- Develop sustainable trauma co-ordinator capacity to immediately co-ordinate the various aspects and pre-alerts for care of individual patients.
- Review & enhance trauma documentation based on best practice elsewhere.
- Develop joint trauma call system.
- Review specialty roles to ensure appropriate level of trauma response.
- Continue to evaluate activation of Major Haemorrhage Protocol.

---

Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015.
<table>
<thead>
<tr>
<th>Ref</th>
<th>Action/s</th>
<th>Measurable Outcomes</th>
<th>Timescales</th>
<th>Geographical Applicability</th>
<th>Lead/s</th>
<th>Indicative Costs</th>
<th>Funding Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>Delivery of Safe, High Quality, Sustainable and Responsive Person-Centred MTC Care</td>
<td><strong>Reception, Resuscitation and Initial Emergency Care</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
| 4.1 | Review and further improve systems whereby the MTC:  
   i. has a consistent mechanism for receiving pre-alert notifications  
   ii. activates where appropriate Consultant-Level Pre-hospital Decision Support and/or Pre-Hospital Emergency Consultant support to the MT patient. (see action 2.2 & 2.3)  
   iii. has a consistent mechanism for receiving and activating code red (patient en-route requiring immediate transfusion) (see action 4.4)  
   iv. provides immediate (and ongoing as appropriate) access to professional decision support/referrals via a single call system. (see action 3.4 re PACS)  
   v. provides immediate access for MT referrals via a single call system.  
   vi. effectively co-ordinates where appropriate the transfer, organisation of beds, theatres etc in preparation for the MT patient. (link to 4.12ii) | Minimise delays in delivery of the right patient care.  
   Reduction in pre-hospital mortality. | ?TBC | Aberdeen Royal Infirmary | MTC Clinical Lead for Initial MT Care | To be worked up | NHS Grampian |
| 4.2 | Review and improve current trauma call system to ensure this is robust | | ?TBC | Aberdeen Royal Infirmary | MTC Clinical Lead for Initial MT Care | None identified | N/A |
and activates a timely response for individual MT patient needs.

| 4.3 | Review, agree and implement model for 24/7 consultant-level trauma team including:  
|     | i. review of specialty rotas to ensure mechanisms are in place for consultant presence regardless of time of day or situation as part of business continuity.  
|     | ii. addressing current/future training requirements (initial/ongoing)  
|     | iii. confirmation of resident cover, costs and timescales. | MT Care | 
|     | • Reduction in avoidable hospital deaths  
|     | • Reduction in death due to haemorrhagic shock | i. ?End April 2015  
|     | ii. ?End Dec 2015 | Aberdeen Royal Infirmary | P Bachoo/ Speciality Leads | To be clarified | NHS Grampian  

4.4 | Evaluate the activation of the recently reviewed and agreed Major Haemorrhage Protocol for Adults which is aligned with the Scottish Major Haemorrhage Template. | Reduced mortality due to haemorrhage shock. | i. Commenced By end June 2015 | Aberdeen Royal Infirmary | R Armes/L Stout | Nil at this stage other than cell saver kit in action 4.9 | Not required  
|     | i. On an individual case basis.  
|     | ii. Scenario simulation of a number of major haemorrhage cases requiring multiple activations of protocol within a short period of time.  
<p>|     | iii. Develop and agree code red protocol for patients en route to MTC who require immediate transfusion. (for paediatrics please see separate plan and action 4.9iv re cell salvage kit and action 4.9v re operator capacity) |</p>
<table>
<thead>
<tr>
<th>Timely Diagnostic Imaging &amp; Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.5</strong> Sustainable and immediate access to interventional radiology 24/7.</td>
</tr>
<tr>
<td>i. Consultant rota for delivery of IR is agreed and recruited to.</td>
</tr>
<tr>
<td>ii. Agree and implement plans for access to IR lab 24/7.</td>
</tr>
<tr>
<td>iii. Require to define requirements regarding IR consultants, radiographers, radiology nurses for MT and general business continuity.</td>
</tr>
<tr>
<td>iv. See paediatric plan re action re skill-set and access to decision support /network for paediatric cases.</td>
</tr>
<tr>
<td><strong>Awaiting confirmation of above and costs.</strong></td>
</tr>
<tr>
<td><strong>Reduction in mortality.</strong></td>
</tr>
<tr>
<td><strong>Reduction in the number of MT patients with loss of limb.</strong></td>
</tr>
<tr>
<td><strong>?TBC</strong></td>
</tr>
<tr>
<td>Aberdeen Royal Infirmary</td>
</tr>
<tr>
<td>S Walker</td>
</tr>
<tr>
<td>i. Initial workforce costs estimated at £360k</td>
</tr>
<tr>
<td>?NHS Grampian</td>
</tr>
</tbody>
</table>

| **4.6** Immediate access to MRI and reporting of this 24/7.  |
| i. Delivery of 24/7 rota for delivery of emergency MR by the end of 2015.  |
| ii. Delivery of hot reports within ?? mins of scan and formal report within ?30minutes of scan.  |
| iii. Remote access/decision support to Island Boards for patients being transfer to MTC.  |
| **Awaiting confirmation of above.**  |
| **Reduction in mortality.**  |
| **Definitive diagnosis.**  |
| **End of 2015**  |
| Aberdeen Royal Infirmary  |
| S Walker  |
| To be confirmed – contained within service sustainability plan.  |
| NHS Grampian  |

| **4.7** Sustainable radiographer on-call rota/capacity to support emergency theatre imaging – what is required? ?linked to 4.5 above.  |
| Aberdeen Royal Infirmary  |
| S Walker  |
| To be confirmed  |
| NHS Grampian  |
4.8 See action 3.5 re decision support and reporting for remote CT/diagnostics for patients to be transferred to MTC from other NoS Boards. Linked to national action 3.4 re remote access to imaging via PACs.

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible</th>
<th>To be confirmed</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen Royal Infirmary</td>
<td>S Walker/ National Lead for PACS</td>
<td>TBC</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>? an image intensifier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>?3 cell salvage equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>?CDU turnaround of kit and reliability</td>
<td></td>
<td></td>
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<tr>
<td>v.</td>
<td>Increase the number of staff within the emergency theatres who are appropriately trained to utilise cell salvage equipment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi.</td>
<td>Increase capacity for anaesthetic assistant support in the initial care (ED/diagnostics/transfer to theatre/critical care) of the trauma patient.</td>
<td></td>
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</tr>
</tbody>
</table>

| v. | Please advise |
| vi. | To be confirmed |

| v. | Please advise of cost |
| vi. | Initial cost £110 (2.5 wte band 6) |

4.10 Critical Care capacity is sustainable to deliver both the needs of MT and non-MT patients.

i. Phased increase in staffed HDU beds from ?? to 15 with flexibility to increase to 18 as required. This includes predicted MT demand.

ii. Increase in staffed ICU beds from 11 to 13 with flexibility to ?16 as required. This includes predicted MT demand.

iii. Formalise mechanism for early pre-alert for ICU/HDU bed.

• MT and Non-MT patients have access to the right level of critical care beds/staff for their clinical needs.

vii. By ? 2017

viii. By ?? 2015

Aberdeen Royal Infirmary

B Stickle/C Leith

i. MT component is 1 HDU staffed bed (£210k per annum)

ii. MT component is 1 ICU staffed bed (£320k per annum)

iii. No cost identified.

NHS Grampian (confirm funding stream been agreed)
4.11 Require to review options and agree the site for provision of 6 24/7 staffed dedicated adult MT beds within a dedicated ward area for patients with multi-system trauma. (need to link with wider ARI reconfiguration plans)  

<p>| | | | | | |</p>
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<tbody>
<tr>
<td></td>
<td>?TBC</td>
<td>Aberdeen Royal Infirmary</td>
<td>P Bachoo</td>
<td>£340k for 6 staffed beds per annum (max cost - need to model options)</td>
<td>NHS Grampian</td>
</tr>
</tbody>
</table>

4.12 Development, agreement and implementation of the model for a Consultant-Led Trauma Team to provide ongoing care, supported by a Trauma Co-ordinator.  

i. Develop 7 day rota for Consultant-Led Trauma Team to co-ordinate acute/rehab care of MT patients with multi-system trauma  

ii. Develop 2 wte MT co-ordinator role which provides 7 day cover and supports the co-ordination of care from the front door, through the MTC pathway and facilitates joint follow-up as required. (Need to work this up as part of wider operational flow work/team)  

iii. Develop appropriate rehabilitation team – see action 4.14.  

iv. Dedicated beds – see action 4.11 above.  

v. Access to pain management team/expertise – need to work this up  

<p>| | | | | | |</p>
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</tr>
</thead>
</table>
|   | ?April 2015 | Aberdeen Royal Infirmary | MTC Clinical Lead for Ongoing/Rehab Care | i. ?cost  
ii. 2.0 WTE Band 7 + oncosts (£100k)  
iii. See action 4.14  
iv. See 4.11 | NHS Grampian |
### MTC Rehabilitation

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
<th>Target Date</th>
<th>Location</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.13</td>
<td>Develop and agree a responsive and sustainable rehabilitation pathway within the MTC to meet individual’s needs and maximise clinical outcomes. &lt;br&gt;a. Implement agreed screening tool (and processes) so every MT patient has their rehabilitation needs screened within first few days of admission. &lt;br&gt;b. Agree rehabilitation prescription nationally and implement this so that every MT patient has a rehabilitation prescription based on their individual needs. &lt;br&gt;c. Appropriate co-ordination and delivery of rehabilitation with appropriate review based on rehabilitation prescription agreed with patient/family and MDT. &lt;br&gt;d. Timely assessment and access to specialist rehabilitation. (see action 4.14viii) &lt;br&gt;e. Continuity of care on transfer (see action 4.16) &lt;br&gt;The above will only be delivered by achieving action 4.14 below.</td>
<td><strong>End Dec 2015</strong></td>
<td></td>
<td>See relevant actions below re funding streams</td>
</tr>
<tr>
<td>4.14</td>
<td>Develop a 7 day MT rehabilitation team with the appropriate level of capacity, skills and competencies to deliver timely person-centred rehabilitation to MT patients. &lt;br&gt;i. 0.5 wte Band 7 Rehabilitation Co-ordinator &lt;br&gt;Functional outcomes are maximised and impact of long term disability is reduced.</td>
<td><strong>End Dec 2015</strong></td>
<td>Aberdeen Royal Infirmary</td>
<td>See below &lt;br&gt;i. £25K &lt;br&gt;ii. £72K &lt;br&gt;iii. £72K &lt;br&gt;iv. £26K &lt;br&gt;v. £9K &lt;br&gt;vi. £9K</td>
</tr>
</tbody>
</table>
Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii.</td>
<td>1.0 wte Band 7 and 0.5 wte Band 6 Physiotherapy</td>
</tr>
<tr>
<td>iii.</td>
<td>1.0 wte Band 7 and 0.5 wte Band 6 OT</td>
</tr>
<tr>
<td>iv.</td>
<td>?1.0 wte Band 3 generic worker</td>
</tr>
<tr>
<td>v.</td>
<td>?0.2 wte Band 6 Dietician</td>
</tr>
<tr>
<td>vi.</td>
<td>?0.2 wte Band 6 S&amp;LT</td>
</tr>
<tr>
<td>vii.</td>
<td>?Neuropsychology/psychology</td>
</tr>
<tr>
<td>viii.</td>
<td>?0.3 WTE Consultant in Rehabilitation Medicine</td>
</tr>
<tr>
<td>Further discussion and modelling required re staffing</td>
<td></td>
</tr>
<tr>
<td>vii.</td>
<td>Add cost</td>
</tr>
<tr>
<td>viii.</td>
<td>£32k</td>
</tr>
</tbody>
</table>

4.15 Rehabilitation is effectively co-ordinated around the individuals needs. Options for effectively and efficiently delivering this requires to be worked up and consideration required whether this is part of the MT Co-ordinators Role/Team to ensure sustainability.

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>?End Dec 2015</td>
</tr>
<tr>
<td></td>
<td>Aberdeen Royal Infirmary</td>
</tr>
<tr>
<td></td>
<td>?W Greenstreet /H Thomson</td>
</tr>
<tr>
<td></td>
<td>0.5 wte Band 7 (£25k)</td>
</tr>
<tr>
<td></td>
<td>NHS Grampian - TBC</td>
</tr>
</tbody>
</table>

4.16 Single MT system care within the neurosurgical and orthopaedic trauma units deliver the same level of MT person-centred care as those in the dedicated MT ward by:

i. Ensuring access to timely psychology assessment and treatment/care. (need to link requirement to action 4.16 vii)

ii. Ensuring delivery of co-ordinated rehabilitation as per actions 4.15 and 4.17.

iii. Co-ordinated, joint discharge/transfer planning as

i. Contained within 4.14vii

ii. See 4.17
per action in 4.17.

<table>
<thead>
<tr>
<th>Timely, Safe and Person-Centred Repatriation, Transfer &amp; Discharge Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.17 Effective, co-ordinated joint discharge/transfer planning occurs for every major trauma patient by:</td>
</tr>
<tr>
<td>i. Developing and agreeing discharge and repatriation protocols and processes to ensure safe and timely transfer/discharge of patients to care closer to home as soon as clinically appropriate.</td>
</tr>
<tr>
<td>ii. Develop systems/processes to ensure early joint discharge planning is co-ordinated between MTC and receiving team (hospital or community).</td>
</tr>
<tr>
<td>iii. Development, agreement and implementation of a single team discharge communication document, incorporating rehabilitation and ongoing care/needs.</td>
</tr>
<tr>
<td>iv. Review mechanisms for timely SAS involvement in planning for transfer.</td>
</tr>
<tr>
<td>v. Develop mechanisms for joint planning for the delivery of ongoing rehabilitation needs taking into account the skills and resources available within the local vicinity and the wider network e.g. virtual/remote support/interventions.</td>
</tr>
<tr>
<td>• Agreed repatriation protocol implemented.</td>
</tr>
<tr>
<td>• Patients receive care closer to home</td>
</tr>
<tr>
<td>v. See action 4.14ii re cost</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>i.</td>
</tr>
<tr>
<td>ii.</td>
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<tr>
<td>iii.</td>
</tr>
<tr>
<td>iv.</td>
</tr>
</tbody>
</table>
10. Rehabilitation and Ongoing Care

10.1 Introduction

Trauma is the fourth leading cause of death in the western world and a major cause of disabling long term injuries (Chaira, Cimbanisissi 2003). For every trauma death there are two survivors with significant or permanent disability. Rehabilitation is a fundamental component across the major trauma pathway which can significantly impact on the trauma patients future functional status and contribution to wider society. It is recognised that rehabilitation is an essential part of care for patients who have suffered major trauma and can reduce length of stay, minimise readmission rates and reduce the use of primary care resources. (National Audit Office 2010)

There is a generally accepted view that rehabilitation is the most challenging part of the pathway in terms of delivery given the historic under resourcing of services and the continued increase in population demand.

10.2 Background

In October 2014, the NoS Rehabilitation and Repatriation Group was established to lead on taking forward a network approach to improve rehabilitation across the NoS. Its key focus was to develop a shared vision and principles, agree a best practice high level pathway for rehabilitation across the NoS and facilitate a clear understanding of the challenges, gaps and key actions to improve patient outcomes and delivery of national standards.

It was recognised that rehabilitation of major trauma patients occurs but this is variable in terms of delivering needs and not individuals who require it, receive it. Across the NoS there were areas identified for improvement/redesign across the network but there are also come significant gaps in delivery.

The MTC component of rehabilitation is in the main, contained within chapter 9. This chapter focuses on the interface between the MTC and specialist and generalist rehabilitation and the network priorities and actions for supporting specialist and community rehabilitation across the NoS.

The agreed vision and principles of rehabilitation within the NoS are contained within Appendix 2. The NoS high level best practice rehabilitation pathway is outlined on page 54.

There is no or very little data available locally, regionally or nationally on rehabilitation in major trauma patients. Work was undertaken in the NoS to attempt to gain learning from England. Based on information provided in the "Transforming Trauma Rehabilitation Recommendation for the North East Region" document, assumptions for the NoS were made based on the trauma activity data from across the North East England Trauma Network. Appendix 8 contains some of the key assumptions and aims to guiding planning where no other robust source has been identified.

10.3 Evidence/Standards

The agreed standards and progress summary relating to rehabilitation care within the national Quality Framework for MT are outlined in the table overleaf.
<table>
<thead>
<tr>
<th>No.</th>
<th>National Quality Framework Standard</th>
<th>Status</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>57.</td>
<td>Rehabilitation should start as soon as is appropriate after admission, typically in the critical care setting, and continue at the intensity required, and for as long as is necessary, to enable patients to achieve their functional potential.</td>
<td>To be complete during 2016</td>
<td>This is variable across the network.</td>
</tr>
<tr>
<td>58.</td>
<td>Patients who have not been admitted to a MTC should not be disadvantaged in accessing the level of rehabilitation they require.</td>
<td>To be complete during 2016</td>
<td>Plans to be put in place to achieve this – linked to delivery of the NoS best practice rehab pathway.</td>
</tr>
<tr>
<td>59.</td>
<td>All stages of care, including the rehabilitation and transfer aspects of the patient’s pathway, should be the responsibility of the network.</td>
<td>To be complete during 2016</td>
<td>Linked to standard/action 60. below</td>
</tr>
<tr>
<td>60.</td>
<td>There should be an appointment of a Trauma Network Director of Rehabilitation Services.</td>
<td>To be complete during 2016</td>
<td>Approach and funding to be agreed.</td>
</tr>
<tr>
<td>61.</td>
<td>There should be adequately skilled and resourced multi-disciplinary rehabilitation teams in all of a network’s services.</td>
<td>Plans in place and being implemented during 2016</td>
<td>Gap analysis commenced in some areas but not yet across all Board areas. Links to Network education programme.</td>
</tr>
<tr>
<td>62.</td>
<td>There should be rehabilitation and care coordinator posts throughout the network. Patients should have an identified key worker to be a point of contact for them, their carers or family doctor, and to ensure delivery of their personal prescription for rehabilitation.</td>
<td>To be complete during 2016</td>
<td>This is variable across the network. Highlighted as a key aspect for MTC and each Board/local area.</td>
</tr>
<tr>
<td>63.</td>
<td>Every MT patient should receive routine screening of rehabilitation needs.</td>
<td>To be complete April 2016</td>
<td>Awaiting guidance nationally on screening tool.</td>
</tr>
<tr>
<td>64.</td>
<td>A rehabilitation prescription should be provided to all trauma patients with identified needs.</td>
<td>To be complete April 201.6</td>
<td>Testing of rehab prescriptions in NoS is underway.</td>
</tr>
<tr>
<td>65.</td>
<td>Trauma patients should receive appropriate levels of care and rehabilitation at all points along their care pathway.</td>
<td>Complete during 2016</td>
<td>Awaiting confirmation on audit/KPIs nationally. This will feed into local and the future regional quality assurance system.</td>
</tr>
<tr>
<td>66.</td>
<td>Many trauma patients are of working age, so vocational rehabilitation should therefore be a key component of rehabilitation.</td>
<td>Complete during 2016</td>
<td>Work underway to understand the current gap in delivery across the NoS.</td>
</tr>
<tr>
<td>67.</td>
<td>A directory of services and resources should be developed relating to rehabilitation and ongoing care to facilitate referral and access to these services.</td>
<td>Complete by end of Dec 2015</td>
<td>Discussions underway re this.</td>
</tr>
<tr>
<td>68.</td>
<td>Appropriate funding structures should be developed</td>
<td>Variable Across</td>
<td>Each Board area starting to understand gaps and resources required for the various levels of</td>
</tr>
</tbody>
</table>
69. There should be coordinated development of rehabilitation services and long-term support in the community which can deliver comprehensive and effective rehabilitation to meet the needs of trauma patients irrespective of age.

Complete during 2016

Links to H&SCP provision of rehab and ongoing care/support. Will be taken forward by individual Boards areas with relevant H&SCPs.

10.4 Specific Challenges, Gaps & Other Relevant Information

A number of key challenges and gaps exist such as:

- rehabilitation services across the system are historically under resourced.
- little robust data is available on delivery of rehabilitation to MT patients.
- based on the above table, there are significant challenges around a number of the national standards.
- staff have expressed concerns that they may end up providing a gold standard for MT patients which is good, but they are concerned that other equally deserving individuals with equally complex needs are disadvantaged.

In addition to the above, there has however been an excellent networked approach to date in terms of understanding challenges, sharing good practice, developing a shared vision, best practice pathway of care, testing specific parts of the pathway and agreeing key actions for the network.

10.5 Key Actions for the NoS

The proposed pathway of care for rehabilitation within the NoS, along with key actions are outlined on page 68. The high level actions underpinning the quality framework and the agreed pathway of care is detailed on page 69.

Key Actions for Improvement Within Existing Resource

Key actions in relation to ‘rehabilitation care’ which focus on key areas of improvement/redesign within existing resources are:

i. Agree standardised screening and rehabilitation prescription/plans within the NoS.
ii. Development and regular updating of a directory of services.
iii. Local co-ordinator/rehab link identified in each area (linked to directory of services).
iv. H&SCP strategic and commissioning plans reflect the rehabilitation needs of major trauma patients.
v. Utilise existing technology to deliver care and support professionals as required to ensure rehab/care is provided close to home as possible.
vi. Develop and agree a repatriation SOP within the NoS.
vi. Develop, implement and evaluate a single document for discharge/transfer of major trauma patients which includes rehabilitation needs.
Key Actions for Improvement With Resource Implications

Key actions in relation to ‘rehabilitation care’ which focus on key areas of improvement/redesign but which have resources implications are:

i. Scope, agree and implement appropriate MDT rehab capacity levels to support screening, development/implementation of rehab prescription/plan delivery for specialist and general rehabilitation in the community based on the individuals needs.

ii. Appointment of a Network Director who has responsibility for quality assurance for trauma rehab across the network.

iii. Create and/or formalise co-ordinator/key worker roles for trauma within local areas.

iv. Others?

10.6 Key Risks

The biggest risk is accessing the necessary resources to deliver the key actions identified.

10.7 Resource Implications

Currently Boards are at varying stages in terms of costing the gaps in delivery for both general and specialist rehabilitation.

Please advise if we should include those Boards who have this information or submit it together as a network ahead of the next MTOG meeting in a few months time – risk that funding for rehab will not be earmarked/considered nationally for 2016/17.

Summary of Key Points for Rehabilitation Care in NoS

- Rehabilitation is an essential part of care for patients who have suffered major trauma and can reduce length of stay, minimise readmission rates and reduce the use of primary care resources.
- Rehabilitation is the most challenging part of the pathway in terms of delivery given the historic under resourcing of services and the continued increase in population demand.
- NoS Rehabilitation and Repatriation Group was established to lead on taking forward a network approach to improve rehabilitation across the NoS.
- A shared NoS vision and principles for rehabilitation has been developed, along with an agreed best practice high level pathway for rehabilitation across the NoS.
- Work is underway to understand the gaps in each of the local Board areas.
- A number of key actions for the network have been identified and some of these have started to be progressed.
- A number of key challenges and risks have been identified which the proposed pathway and draft plans aim to manage/mitigate.
- Others??
Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015

Proposed Best Practice Pathway and North of Scotland Major Trauma Rehabilitation & Repatriation Actions

Trauma Occurs & Individual Transported to Hospital

Acute /Critical Care (ED, ICU & PCCU)
- Screening individuals
- Initiate rehabilitation plan/prescription within 2 calendar days
- Co-ordination of agreed management plan
- Pre-alert to specialist/major trauma ward
- Notification to GP & HASCSCI team within 3 days of admission

Specialist/Major Trauma Ward
- Daily MDT Ward Rounds with specialist rehabilitation input as required
- Delivery of rehabilitation plan/prescription
- Multi-specialty/disciplinary input to management plan
- Pre-alert to GP/community/hospital receiving team as appropriate

See joint discharge planning section

Specialist Rehabilitation Inpatient Care (level 1 or 2)
- Consultant in Rehabilitation Medicine develops Specialist Rehabilitation Plan/Prescription (extension to rehabilitation prescription to complex rehab needs)
- Initiate/delivery of specialist rehabilitation plan/prescription
- See joint discharge planning section

Joint Discharge Planning
- Early pre-alert to relevant teams
- Early joint discharge planning with individual, the family & relevant teams & agencies (SAS, HASCSCI, hospital, third sector etc)
- Single team discharge/transfer document
- Rehabilitation prescription follows the individual
- Involvement of receiving team in delivery of care as appropriate

Community Setting (home, residential setting or community hospital)
- See joint discharge planning section
- Seen within 75 days by senior person from MDT
- Delivery of agreed rehabilitation plan/prescription and care plan
- See Community Re-integration section

Effective and Timely Co-ordination of Care/Audit Against Agreed KPI’s

Proposed Actions for Acute Critical Care & Specialist/MT Ward
- 7 day Consultant-Led team to co-ordinate & deliver rehabilitation/care.
- Develop MT Co-ordinator capacity to facilitate care based on individual needs (rehabilitation & acute ongoing care)
- Develop adequate MDT rehabilitation capacity for 7 day cover.
- Develop daily MDT specialty ward round with Consultant in Rehabilitation Medicine input
- Agree screening tool & who is responsible for undertaking this.
- Agree rehabilitation prescription for use across Scotland/NoS.

Proposed Actions for Specialist Rehabilitation
- Agree specialist rehabilitation prescription tool.
- Increase capacity as per model of care to adequately deliver input within acute hospital and specialist facilities.
- Create single point of contact.

Proposed Actions for Joint Discharge Planning
- Single point of contact for hospital care &/or specialist rehabilitation.
- Develop MT Co-ordinator capacity to facilitate early joint discharge planning/transfer planning
- Develop mechanism for joint multi-agency joint discharge planning (including Telecare) plan
- Develop & agree a single document for discharge/transfer of care
- Develop/agree discharge/repatriation protocol SOP
- Utilise e-health solutions to support ongoing care as required.

Proposed Actions for Community
- Local partnership plans reflect the creation of capacity to deliver person centred community rehabilitation & ongoing health & social care needs.
- Directory of services is available & regularly reviewed & updated.
- Locally identified co-ordinator role/person.

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<table>
<thead>
<tr>
<th>Ref</th>
<th>Action/s</th>
<th>Measurable Outcomes</th>
<th>Timescales</th>
<th>Geographical Applicability</th>
<th>Lead/s</th>
<th>Indicative Costs</th>
<th>Funding Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>Delivery of Safe, High Quality and Person-Centred Goal Focussed Rehabilitation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Every major trauma patient has their rehabilitation needs screened and a rehabilitation prescription agreed within 72 days of incident.</td>
<td></td>
<td>MTC/Trauma Unit/s</td>
<td>To be confirmed</td>
<td>Local</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>Access to full multi-disciplinary rehabilitation 7 days per week within TU based on individuals needs as per rehabilitation prescription.</td>
<td></td>
<td>Trauma Unit/s</td>
<td>To be confirmed</td>
<td>Local</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 5.3 | Ensure there is appropriate access to Specialist Rehab assessment and treatment across the NoS.  
   i. Require to consider innovative ways how elements of this can supported in remote and rural settings  
   ii. Model most effective, efficient and sustainable way of delivering this, whilst delivering required standards. | | Regional | Crude costings against BRSM guidelines is estimated at £1.2m but significant work required to model requirements, best options for delivery of MT care and manage current service gaps. | ?Regional |
| 5.4 | Community rehab – to be advised and worked-up locally. | | H&SCP’s | To be confirmed | Local |
| 5.5 | Ongoing care in the community – to be advised and worked-up locally | | H&SCP’s | To be confirmed | Local |
11. Paediatric Major Trauma in the NoS

11.1 Introduction

Paediatric major trauma care is a key component of the NoS MT Network. The high level pathways and actions within previous chapters of this plan relate to the provision of major trauma care for both the adult and paediatric population with the NoS. This chapter pulls together the key challenges and actions for the paediatric component of the network (most of which are within various sections), to provide an overview of these across the pathway.

11.2 Background

In early 2015 a national Sub Group of MTOG was established to take forward the paediatric component of the national network for major trauma. The Sub Group is chaired by Dr Kate McKay, add title. Mr Chris Driver, Consultant Surgeon for Paediatrics in NHS Grampian and Lorraine Scott, Programme Manager for NoS MT Programme represent Grampian and the NoS on the Sub Group.

A key focus of the Sub Group has been around ascertaining current delivery and future key actions of MTC care within the current four MTC model in Scotland. No formal decision has yet been made nationally regarding the future configuration of paediatric MTCs.

Thankfully numbers of paediatric major trauma are relatively low within Scotland. Exact numbers are unknown as STAG data is not collated in those under 16 years of age (check). In the absence of national, regional or local data, Mr Driver reviewed the Trauma Audit and Research Network (TARN) data from North West England and used this as the basis to calculate the potential paediatric trauma activity for Scotland and the NoS. The calculations are contained within Appendix 7. The Chair of the national Sub Group has agreed that we use this data until national/regional data becomes available.

Based on these calculations it could be extrapolated that a total of 30 moderate/major trauma cases per year would go to Aberdeen Royal Children’s Hospital/MTC. This would equate to approximately 3 trauma cases per month. This would equate to 17% of total Scottish paediatric MTC activity.

11.3 Evidence/Standards

There are very few specific standards relating to paediatrics within the national Quality Framework for MT. Therefore all standards within the quality framework were assessed against paediatric care in the NoS. Delivery against these standards are reflected in the previous chapters covering pre-hospital to rehabilitation care.

The diagram on page ?? summarises the progress against the standards in relation to paediatrics, along with the key priorities in delivering these standards.

Chris – is there any other standards/evidence you feel we need to highlight?
11.4 Specific Challenges, Gaps & Other Relevant Information

The diagram on page ?? outlines the areas which require action against the various national quality framework standards of care.

In relation to specific challenges and key actions, these were discussed at three specific paediatric workshops at the NoS MT Event on the 13th May 2015. The key issues highlighted were:

- Small numbers of which we have no data on. We know from England that around two thirds of cases will arrive via SAS and the remainder via parents with kid in arms.
- Overall current model in the NoS wouldn’t change significantly but there are opportunities to improve care via protocols, network support, and RACH internal improvements.
- There is anxiety in delivering care to paediatrics across sites – management/range of equipment is different to adults although A, B, C is the same as adults
- One phone call model required for senior support for MT advice – may require live decision support over VC to support local units.
- Need more focus re the pre-hospital component e.g. clinical skills, bypass protocols etc.
- Require to review and consider who is dispatched from the Pre-hospital Team for paediatric major trauma cases.
- No Paediatric ICU in Aberdeen – relatively small number of transfers from Aberdeen.
- No national paediatric HDU transfer capacity - require a sick child retrieval service in Scotland.
- Education in basic paed trauma care required - require to up-skill all local hospitals in ‘APLS’.
- Should explore rotation of staff e.g. local to ARI and ARI staff to bigger hosp i.e. Yorkhill for possibly mini secondments but this would need to be supported by funding/backfill or through a workforce exchange initiative.
- Telemedicine – utilisation of technology more effective.
- Radiology support provided by on-call adult radiologist – no issues with this. Interventional radiologists is a challenge regionally and nationally.

Top priorities proposed via the workshops were:

- Education
- Communication – clear guidelines/protocols, reliable access to specialist decision support
- Discharge – access to community AHPs
- Data collection
- Retrieval

A further workshop was held on the 27th July 2015 which focussed on the rehabilitation part of the MTC pathway for paediatric trauma patients. The key gaps and areas for development highlighted were:

- MDTs require to occur earlier in the pathway than in current practice. This will facilitate early screening/assessment of rehabilitation needs and the appropriate implementation of the rehabilitation prescription. This will also support earlier discharge planning.
- Co-ordinator role is required which may be the patients named nurse/Senior Charge Nurse.
- Daily MDT’s require to occur which will require to be led by the co-ordinator role.
• Further works is required to determine the process for timely involvement of the Community Paediatric Consultant and explore access to advice/support, if appropriate from a Consultant in Rehabilitation Medicine.
• Community Development Team would in their existing role facilitate the review of ongoing needs within the community but inclusion of other agencies may be required on a case by case basis e.g. education, social work etc.
• Development of an integrated MDT discharge/transfer document is required. This could be developed/agreed nationally.

?Anything else?

11.5 Key Actions for Paediatric Major Trauma Care in the NoS

The high level actions underpinning the quality framework as highlighted by colleagues in the NoS are outlined on page 25.

11.6 Key Risks

Any key risks at this stage?

11.7 Resource Implications

Any specific resource implications at this stage for paedts?

Summary of Key Points for Paediatric Major Trauma Care in the NoS

• Number of paediatric trauma is expected to be low but there is no data collected on nationally or within the NoS regarding paediatric trauma.
• Based on data from England, the NoS will likely see 30 moderate/major trauma cases per year, resulting in around 2-3 a month. Basic information has commenced and plans are in place to collate this as soon as audit capacity in situ.
• This plan builds on the existing solid infrastructure/networks for paediatric care by focussing on formalising protocols, decision support, network plans for education/training and formalising aspects of MTC care so these occur earlier within the existing pathway of care.
• A number of challenges and risks have been identified which the proposed pathways and plans aims to manage/mitigate.
• Anything else?

References
12. Supporting the Workforce

12.1 Introduction

The successful delivery of any network is dependent on the professionals within it. Throughout this plan, there are a number of areas highlighted in terms of adequately supporting the workforce via decision support, documents/protocols or through appropriate means of training and development.

This chapter aims to pull together the key actions and mechanisms which will be taken forward by the Network which will support professionals across the network to deliver the right care, at the right time, in the right place using the right skills and access to support when they require it.

12.2 Background

During the initial NHS Board visits to discuss priorities for the NoS major trauma network, each area highlighted concerns in terms of skill development, maintenance and immediate access to decision support when and as required.

In response to this a NoS Group was established to consider the challenges and propose key network solutions to support staff across the network, which would ultimately improve patient care and outcomes. Initial focus was on nurse support and training but this soon broadened out across all professional groups.

12.3 Evidence/Standards

These are embedded across chapters 6 to 11 which span the various elements of the pathway of care from pre-hospital through to rehabilitation and ongoing care.

12.4 Specific Challenges, Gaps & Other Relevant Information

In relation to specific challenges and key actions, these were discussed at three specific workshops focusing on ‘Developing and maintaining workforce skills and competencies in the delivery of care for major trauma patients and their families’ at the NoS MT Event on the 13th May 2015. The key issues and themes highlighted are outlined below.

- There are implications for releasing staff for training and development opportunities e.g. resource and staff manpower to release staff, and the identification of finances.
- There is a need for greater understanding of differing contexts in which Trauma teams function across NoS and particularly the appreciation of each other’s roles within the trauma team.
- Requires to support the development of non technical skills to ensure adequate delivery of care e.g. use of technology, debriefs, emotional, spiritual and psychological support for the trauma injured person and associated family members, activation of protocols etc.
- Use of technology should be have a greater focus e.g.
  - to provide remote decision support
  - support delivery of care closer to patients/families homes
to improve communication across the pathway between teams
- improve responsiveness to and inclusion of family in care needs required.
- There was broad agreement that varied courses existed to meet many needs of professional. There is a need to explore how non technical skills training, inter professional appreciation learning objectives can be realised.
- There is lots of training/workforce development tool/events which could be shared more widely via a network approach. This could increase capacity and opportunities.
- Requirement for greater application of simulation training relating to all aspects of trauma care including technical and non-technical skills and for varying levels of expertise within the trauma team.

Anything else?

12.5 Key Actions for Workforce Development and Support in the NoS

The high level actions identified to date by professionals across the NoS are outlined below, along with key priorities for taking forward over the next 9-12 months.

- Educational priorities and action for 2015/16 agreed:
  - Standardisation of documentation and communication systems
  - Exchange programme for trauma staff teams
  - Networked and accessible educational delivery

- Discussion on a national scale with associated groups in west and south east Scotland should be taken forward to ensure maximisation of resources.

12.6 Key Risks

- Availability of resources
- Unnecessary duplication nationally

Any key risks at this stage?

12.7 Resource Implications

Need to attempt to cost this – Fiona, any ideas on costs for exchange programme pilot and also what costs will be incurred via VC educational programme?

Summary of Key Points for Workforce Development in the NoS

- Need to incorporate this
- Anything else?
13. **Summary of Resource Implications for Network**

Summary of various resource implications outlined across the document in this section – local, regional and national.

Need to highlight that further work is required as a network and local board level around costs e.g. implementation of model, rehab, PHC – based on SAS plan etc.
14. Engagement in the Development and Agreement of the Plan

14.1 Approach to the Development of the Plan
The NoS Major Trauma Programme Group has led on the development of this plan on behalf of the NoS Planning Group. The NoS Major Trauma Group has representation from NHS Grampian, NHS Highland, NHS Orkney, NHS Shetland, NHS Western Isles and the Scottish Ambulance Service.

Underpinning the NoS Major Trauma Programme Group is a number of workstream groups who have been charged with contributing to the plan. These Groups, where appropriate have linked or fed into national workstreams.

- NoS Pre-hospital, Transfer and Retrieval Group – Chaired by Dr Pete Williams, NoS Clinical Lead for MT
- NoS Workforce and Education Group – Temporarily Chaired by Lorraine Scott, Programme Manager for NoS MT Programme
- Aberdeen MTC Implementation Group – Chaired by Dr Nick Fluck, Medical Director
- NoS Rehabilitation and Repatriation Group – Chaired by Susan Carr, AHP Director
- Patient, Carer and Staff Experience Group – Chaired by Lorraine Scott, Programme Manager for NoS MT Programme

Appendix 11 sets out the organogram, along with membership for the above Groups.

The NoS MT Programme Group facilitated an inclusive approach to the development of the plan through various mechanisms such as Board visits, regular meetings with Boards, workstream groups and a range of events. In May 2015, an event was held whereby approximately 115 clinicians and managers from across the NoS attended to inform the emerging NoS Major Trauma Model and Implementation Plan. A copy of the report is available upon request.

Appendix 12 provides an outline of development process for the NoS MT Implementation Plan.

14.2 Clinical Leadership
Clinical leadership, both formal and informal has and will continue to be pivotal in terms of the success of the network to date and the progress which is required over the coming years in implementing the redesign and changes to ensure improvement in clinical and health outcomes for the NoS population.

14.3 Agreement of the Plan
Formal agreement of this plan in its entirety is anticipated to be concluded in September 2015 – Jim please advise, subject to this being agreed by the NoS Chief Executives Group in late September 2015. Papers on the vision, model, network development and key priorities have been submitted to NoSPG every three months since May 2014.

14.4 Contact/For Further Information
- Graeme Smith, Executive Lead for the NoS Major Trauma Programme – graemesmith@nhs.net
References

References to be completed and finalised in final draft
Appendix 1

Add NoS MT Patient flow diagram once information received from ISD
Appendix 2

**Proposed Vision for Major Trauma Care in the North of Scotland**

**Background**

It is critical that there is a shared vision (and underpinning principles) for the delivery of major trauma care across the North of Scotland (NoS). This document aims to outline the proposed NoS vision and principles (as part of the national network for major trauma care) setting out the collective aspirations for the delivery of high quality, safe and sustainable major trauma care (pre-hospital to ongoing care, generic and specialist) for the population within the NoS.

This document has been shared widely and discussed at a series of meetings across the NoS in order to engage with as many individuals/teams as possible in order to develop a single shared vision for the NoS. The vision was approved at the NoS Major Trauma Programme Group meeting held on the 11th February 2015.

The vision will be reviewed periodically. It will also be underpinned by a NoS Major Trauma Implementation Plan setting out the key actions to effectively and efficiently deliver the agreed vision and principles.

**Proposed Vision and Principles for Major Trauma Care in the North of Scotland**

Major trauma is a term used to describe injuries that are, or have the potential to be life changing or life threatening. Major trauma patients require specialist care from a wide range of healthcare professionals. There are many causes of major trauma but the most common causes are road traffic accidents, falls and assault.

The proposed vision for major trauma care in the NoS is that every person (regardless of age) who experiences major trauma receives responsive, high quality person-centred care from the point of first contact through to recovery. The delivery of care will be provided through a robust multi-professional/multi-agency network approach (as part of the inclusive national network for major trauma) ensuring that care is co-ordinated around the individual’s needs. The focus of all professionals and agencies contributing to the individual’s care is around maximising the impact of available resources around clinical/health outcomes, ensuring the best possible experience for individuals and their families/carers, whilst minimising the long term impact and maximising quality of life.

Key principles underpinning the proposed vision are outlined below.

**Network Approach**

- High quality, safe and effective person-centred major trauma care (pre-hospital to discharge/ongoing care) will be underpinned by a network approach across the NoS which is also part of the national network for major trauma. This approach will be supported by timely access to senior decision support, timely communication and the transfer of information/images, agreed standardised communication processes/documentation, agreed pathways of care and in/outreach educational programmes.
- The delivery of the agreed outcomes for the NoS Major Trauma Network is the responsibility of all Boards, agencies and professionals (clinical and non-clinical) who have a direct/in-direct role in the provision of major trauma care. All professionals will respect each other and acknowledge the contribution and the circumstances to which others operate in.
All population groups will have major trauma care planned on a person-centred basis, including consideration to family/carer issues.

The provision of major trauma care will not disadvantage other individuals requiring health/clinical care.

**Pre-hospital, Transfer & Retrieval Care**

- Rapid response will be provided by a suitably trained clinician (or team as appropriate) to provide a timely pre-hospital assessment and initial management to the individual. Clinicians will have immediate access to senior decision support at all times.

- Based on the initial assessment and the nationally agreed triage tool, safe and efficient transfer/retrieval will occur without delay to the most appropriate hospital with the necessary services to manage the individual's injuries. In some circumstances the local hospital will have appropriate facilities and expertise to provide definitive treatment for the specific individual's needs.

- If the individual requires to be transferred to a major trauma centre (MTC) but the transfer time is beyond 45 minutes, or if the individuals condition is unstable, they will be transferred to the nearest facility which has the capacity and expertise to resuscitate and stabilise prior to onward transfer or retrieval. Transfer decisions will be supported by agreed bypass protocols and immediate access to senior decision support. For those individuals who are on the boundary of the 45 minute transfer time to a MTC, decisions will be made on a case by case basis to ensure minimum delays to definitive care.

- When individuals cannot be safely transferred due to adverse weather conditions, ongoing virtual support will be provided by the appropriate MTC team based on both the needs of the individual and the team currently providing care.

**Major Trauma Centre/Hospital Care**

- On arrival at the MTC, the individual will be met by a suitably trained consultant-led trauma team who will work together to rapidly assess and provide initial trauma management. The trauma team will include the relevant specialities and immediate access to diagnostics (CT within 30 minutes) based on the injuries as notified by the pre-hospital team. Formal reporting of all emergency diagnostics will occur within 30 minutes from time of scan.

- If the individual is unstable or unable to transfer within 45 minutes, the individual will be transferred to the nearest facility which has the capacity and expertise to resuscitate and stabilise prior to onward transfer or retrieval if appropriate. On arrival at the non-MTC hospital, the individual will be met by a suitably trained consultant/GP-led trauma team who will work together to rapidly assess and provide initial trauma management. Where this is not available in specific remote and rural areas, the individual will be met by a modified trauma team led by a suitably trained professional (paramedic/nurse) until other clinicians arrive. The trauma team will include the relevant specialities and immediate access to diagnostics (CT within 30 minutes) based on the injuries as notified by the pre-hospital team. Formal reporting of all emergency diagnostics will occur within 30 minutes. Local hospitals will have variation in specialist expertise and access to CT based on personnel/skills availability on any given day and may require support from the MTC as appropriate.
If the individual requires further specialist input at the MTC or at a national service, this will be arranged via one call supported by clear referral pathways and transport links. Timely transfer will occur with decision support available if required. Receiving team will be primed and a bed in the most appropriate clinical setting will be available.

Individuals who require emergency surgery will have access to fully equipped and staffed theatres (based on individuals needs) within a maximum of 30 minutes of arrival. Appropriate level of critical care and support will be available. Where this is delivered outwith a MTC or trauma unit, it is acknowledged that surgical and critical care (high dependency and intensive care) capacity and expertise may be limited and support/advice will be provided by the MTC as required.

Within the MTC, a trauma co-ordinator who is part of the consultant-led trauma team will be responsible for co-ordinating the agreed multi-disciplinary/speciality management plan from pre-arrival through to discharge/transfer to onward care.

Individuals with major trauma will be cared for by a multi-disciplinary/speciality team focussed on a shared plan based on the individual's needs. Within the MTC, the team will be led by a Trauma Consultant who has overall responsibility for facilitating the individual's care and ensuring the relevant teams/experts are contributing to the needs based management plan. Individuals with multi-system trauma will be cared for in a dedicated major trauma bed. Those individuals with single system trauma will be cared for in the most appropriate ward/unit for their needs. Regardless of the location of care (local units/non-major trauma wards), teams will have access to senior decision support via the Trauma Consultant and his/her team as required.

Rehabilitation, Discharge/Transfer and Ongoing Care

Rehabilitation (specialist/generic) will be person-centred and goal orientated. This will commence from day one in the acute setting. This will continue until all realistic goals have been achieved. Rehabilitation needs will be fully defined in an age-appropriate prescription and be delivered as close to the individual’s home as clinically appropriate.

Discharge home or repatriation of the individual to an appropriate hospital/community setting will occur within 48 hours of when jointly agreed by both the current and receiving health and care teams. Early dialogue and co-ordinated planning with the receiving multi-disciplinary team will occur to ensure the agreement of a shared discharge plan - this will be facilitated by the trauma co-ordinator. A single multi-disciplinary/professional discharge communication document will accompany the individual and will also be sent electronically to the team (GP, referring team and if appropriate hospital/facility) responsible for ongoing care.

Those individuals who have ongoing health and social care needs will have a health and social care assessment carried out, and a tailored community package of care (with ongoing expert input/support as required) commissioned and in place as soon as possible prior to decision to discharge.

Follow-up care will be co-ordinated and multi-professional/agency based on the individual’s needs. This will take place as close to home as possible supported by technology, where appropriate.
Those patients who are triaged and transported to an MTC or trauma unit and who do not require MTC/trauma unit care, will receive initial treatment as agreed with the individual and local hospital prior to being transferred back to the local hospital as soon as safe to do so. Decisions will be based upon the services/skills available within the local hospital. This will be particularly important in remote and rural hospitals whereby elements of moderate trauma care may require to be delivered by the MTC/trauma unit on their behalf.

Additional Supporting Information/Notes

- 'Major trauma constitutes injuries which could result in permanent disability or death and/or combinations of injuries with an injury severity score exceeding 15'. (Royal College of Surgeons of Edinburgh 2012)

- In relation to the NoS Major Trauma Network, this constitutes the geographical locations of Grampian, Highland, Orkney, Shetland and Western Isles. It is however noted that populations within specific parts of Highland (Argyll and Bute) and Western Isles, will geographically benefit from care provision via the West of Scotland Major Trauma Network.

- The development of the National Major Trauma Network is based on four regions across Scotland and will go live during 2016. It is anticipated that there are approximately 1,000-1,100 adults and 100 children seriously injured across Scotland. This equates to approximately 120 cases in the NoS per year.

- The above vision and principles are cognisant with the agreed National Quality Framework for Major Trauma produced in 2013.

- The 45 minutes transfer time is calculated on the time the decision is made to transfer, to the arrival at the MTC.
### Appendix 3

**High Level Major Trauma Pathway**

<table>
<thead>
<tr>
<th>Pre-Hospital Response</th>
<th>Initial Assessment in Hospital</th>
<th>Acute Trauma Care</th>
<th>Ongoing Acute Care &amp; Rehabilitation</th>
<th>Community Rehabilitation &amp; Ongoing Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>(care at the scene and transfer to hospital setting)</td>
<td>(in local hospital if &gt;45mins from MTC or if patient is unstable/requires resuscitation)</td>
<td>(stabilisation, emergency scans/tests, theatre &amp; intensive/high dependency care)</td>
<td>(non-emergency operations, scans/tests &amp; rehabilitation (specialist and generic))</td>
<td></td>
</tr>
</tbody>
</table>

- **Best possible clinical outcomes**
- **Reduced risk of death**
- **Best possible experience**
- **Minimised disability**
- **Optimal quality of life**
Appendix 4

Proposed Role and Function of the Various Components of the North of Scotland
Major Trauma Network

<table>
<thead>
<tr>
<th>Network Component</th>
<th>Proposed Role &amp; Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>National MT Network (Scotland)</td>
<td>The single MT national network is composed of four regional components, each with a single MTC. A single SAS delivers a number of roles at national, regional and local network level.</td>
</tr>
</tbody>
</table>
| NoS Regional MT Network | NoS Network is based on an inclusive managed care network approach which is collectively responsible for all aspects of trauma care from the point of injury to rehabilitation/ongoing care across the NoS. The network includes those delivering and planning major trauma care across the pathway, along with individuals and their families/carers. The key aim is that all services/professionals across the NoS work together to meet the individual's needs regardless of where geographically the injury occurs.  
NoS MT Network is composed of five distinctive geographical networks as outlined below, each of which contain various local health and social care partnerships/networks. In addition to the geographical networks the Network also contains a MTC (adult/paediatrics), ?one trauma unit, a number of local emergency hospitals and a number of health and social care partnerships which are all supported by the SAS.  
The Network has four specific roles; these are to:  
1. deliver the agreed NoS vision for MT to reduce avoidable deaths, improve functionality, health and psychosocial wellbeing, thus increasing quality of life on an individual case basis.  
2. support each other locally and regionally through the planning and delivery of emergency preparedness for both local Board major incidents and national incidents of mass casualties.  
3. support clinical teams across the NoS in the delivery of MT patient care. 
4. contribute to the function of an inclusive national MT network which both maximises individual patient care and provides the national response to mass casualties’ incidence.  
Whilst each service, unit or local network has responsibility for their clinical governance, members of the network will require to work together to deliver against the agreed national network governance structure including the quality improvement programme across the NoS to ensure ongoing assurance and improvements. |
Local Board Networks

NoS MT Network component is composed of five local geographical networks as outlined below:

- Grampian
- Highland (Argyll & Bute patient flow will go to the West of Scotland)
- Orkney
- Shetland
- Western Isles (majority of patient flow will go to the West of Scotland)

It is recognised that a small number of patients will go out with the NoS MT Network due to their requirements for highly specialised spinal or burns services (nationally delivered) or for logistical transport reasons e.g. Orkney and Shetland.

Each local network contains various clinical/non-clinical networks and one or more local health and social care partnerships/networks.

Each local network will contain at least one local emergency hospital as outlined below.

<table>
<thead>
<tr>
<th>Network Component</th>
<th>Proposed Role &amp; Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major Trauma Centre (MTC)</strong></td>
<td>Each regional Network component has one MTC. Within the NoS the MTC for adult and paediatrics is based in Aberdeen.</td>
</tr>
<tr>
<td>Based in:</td>
<td>&quot;MTC is a multi-speciality hospital, on a single site, optimised for the provision of trauma care. It is the focus of the trauma network and manages all types of injuries, providing consultant-led, and often consultant-delivered care”</td>
</tr>
<tr>
<td></td>
<td>(NHS Clinical Advisory Groups. Regional Networks for Major Trauma 2010).</td>
</tr>
<tr>
<td>MTCs are composed of consultant-led specialist teams with access to appropriate diagnostic and treatment facilities round-the-clock and provide life saving treatment to seriously injured patients. The MTC has:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• all surgical &amp; support services (general surgery, emergency medicine, vascular surgery and interventional radiology, along with services such as critical care and anaesthesia) provide consultant led care, 24/7.</td>
</tr>
<tr>
<td></td>
<td>• capability to provide highly specialised care.</td>
</tr>
<tr>
<td></td>
<td>• access to specialist rehabilitation assessment and treatment services</td>
</tr>
<tr>
<td></td>
<td>• a role in supporting other hospitals in the network in optimising the MT patient pathway.</td>
</tr>
<tr>
<td></td>
<td>• a role in providing clinical leadership and support throughout the patient pathway to ensure patients receive definitive care quickly.</td>
</tr>
<tr>
<td></td>
<td>• robust clinical governance and performance programmes in place to emergency quality assurance and improvement.</td>
</tr>
<tr>
<td></td>
<td>• active role in relevant research, education and injury prevention programmes that support trauma care across the region.</td>
</tr>
</tbody>
</table>
A Trauma Unit (TU) is a facility which has a well-functioning, multi-disciplinary service which includes, an emergency department, general surgical service, orthopaedic surgical service and an intensive care unit.

Unlike elsewhere in Scotland, TU’s and LEH’s are more than 45 mins from the NoS MTC, therefore have a crucial role in the delivery of the initial part of the MT pathway in the NoS.

Within the NoS, there is one TU based in Raigmore, Inverness which is currently able to deliver on all of these requirements. Raigmore could be classified as at Trauma Unit Plus given the breadth of services and expertise available e.g. specialist rehabilitation, vascular, maxofacial etc.

TU requires to:

- manage injured patients from its local catchment area.
- provide initial care and resuscitation of MT patients.
- if skills and expertise are present in TU, care will be provided with input as required by MTC. Where care cannot be effectively provided, the patient will be transferred to MTC.
- provide acute rehabilitation and has have access to specialist rehabilitation as part of a regional approach.
- participate/lead upon research and education and participate in national injury programmes.
- have robust clinical governance and performance systems in place to ensure quality assurance and improvement as part of the network governance programme.
- provide support to LEHs within their catchment area.
- provide training and education to staff in the management of the trauma patient. This will be where appropriate, linked to the wider network programme.

Definition to be reviewed based on a nationally agreed definition.

<table>
<thead>
<tr>
<th>Network Component</th>
<th>Proposed Role &amp; Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trauma Unit/s (TU)</strong></td>
<td><strong>Based in Raigmore</strong></td>
</tr>
</tbody>
</table>
Local Emergency Hospitals (LEHs)

Based at:
- Balfour Hospital, Orkney
- Belford Hospital, Fort William
- Caithness General Hospital, Wick
- Dr Grays Hospital, Elgin
- Gilbert Bain Hospital, Shetland
- Lorne & Islands Hospital, Oban
- Western Isles Hospital, Stornoway

In addition to the above:
- A number of other hospitals within NHS Highland are currently being reviewed in terms of their role, population needs and numbers of MT incidents.
- Raigmore will also provide LEH and TU capabilities to local population
- ARI/RACH provides MTC, TU and LEH capabilities to local populations.

Due to geographical expanse and travel times (>45 mins from TU or MTC) across the NoS, the Local Emergency Hospitals (LEH’s) within the NoS will have a crucial role in providing initial care and resuscitation of MT patients until patients can be safely transferred to definitive care. LEHs also have a key role in providing rehabilitation when required.

There is currently no formalised definition for LEHs in Scotland, therefore the proposed minimum criteria has been developed by clinicians and managers within the NoS Network. The proposed definition and criteria will be reviewed once a national definition is agreed.

Within the NoS there is at least one LEH in each local Board network. Each LEH has, as a minimum, a core set of facilities and skills/competencies (see below). In addition to this, LEHs will vary in terms of other services, capacity and expertise. Appendix 3 provides an outline of LEHs and services available.

It was agreed that the definition, role and function should be described in the context of minimum requirements in relation to facilities and skills/competencies. Minimum requirements of a LEH are outlined below.

Facilities
- Emergency Department
- Access to Blood Bank and haemorrhage control medication
- The ability to provide Level 2 care for a limited period of time
- The ability to provide Level 3 care prior to retrieval
- The ability to provide in-hospital rehabilitation
- Access to 24/7 CT imaging and timely reporting
- Access to 24/7 Plain film radiology imaging and timely reporting
- Contingency plan for local based transfer where retrieval is not possible.

Skills
- Skills necessary for resuscitation are accessible 24/7:
  - initial assessment/emergency care skills
  - anaesthetic skills
  - non-operative haemorrhage control skills
  - transfusion capability
  - damage control orthopaedic intervention skills
- Have the capability and readiness to provide initial life saving care/ resuscitation of MT patient before transferring to MTC/TU.
- Have skills to provide in-hospital rehabilitation, with access to support from specialist rehabilitation professionals when and as required.

This role may be provided, with the required support from the TU/MTC for a number of hours or days when transfer is delayed due to adverse weather.
It also requires to be noted that a small number of MT patients receiving initial care by the LEHs may be transferred outwith the NoS to the WoS due to transport logistics or requirements for specialist spinal or burns services which are delivered nationally in the central belt.

<table>
<thead>
<tr>
<th>Network Component</th>
<th>Proposed Role &amp; Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Within the H&amp;SCPs (outlined below) there will be one or more community hospitals in a</td>
</tr>
<tr>
<td>Hospitals</td>
<td>local Board network. Many of which will have inpatient beds or community facilities which may support the transition to the community setting by providing interim rehabilitation and ongoing care closer to the individuals' homes. A number of these hospitals may also have Minor Injury Units, which are on the whole likely to be by-passed when an individual requires initial major trauma care.</td>
</tr>
</tbody>
</table>

| Community Health and Social Care Partnerships (H&SCPs) | H&SCP’s are composed of NHS, local authority third sector and independent sector organisations that work together to plan and deliver integrated health and social care services that will make a positive difference to the health and wellbeing of the population to which they serve. Each local Board level network will have at least one H&SCP. These partnerships will have oversight of delivering MT care via:  
- multi-agency/community initial response to pre-hospital care (first/community responder and BASICs) in conjunction with the SAS  
- assessment, commissioning and oversight of provision of community rehabilitation and ongoing care provided by statutory and non-statutory agencies based on the individuals' needs. |

| Transportation | Core to the function of the NoS MT Network is the:  
- pre-hospital response for treatment and transportation (including on-scene triage and tasking of the right asset to the scene)  
- transfer component supporting repatriation from national services to NoS  
- transfer component of inter-regional repatriation and transfer of discharged patients with specific clinical needs. In addition to the pre-hospital response, SAS is the main provider and co-ordinator of the various elements at national, regional and local level. |

**Transportation**  
(Pre-hospital treatment & transfer and repatriation/transfer)  
Includes:  
- SAS National Triage and Tasking Desk  
- SAS Road Teams (paramedics/assistants)  
- SAS Air Ambulance Teams  
- BASICs Pre-Hospital Response  
- Community First Responders Pre-Hospital Response  
- Enhanced Pre-hospital Emergency Consultant Teams  
- EMRS/ScotSTAR Retrieval/Transfer  
- Search & Rescue
<table>
<thead>
<tr>
<th>RNLI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maritime Co-ordination Centres</td>
</tr>
<tr>
<td>Ministry of Defence</td>
</tr>
<tr>
<td>Transfer services by referring hospital</td>
</tr>
</tbody>
</table>
Appendix 5

DRAFT V2

Intelligence in Relation to Major Trauma Flow Across North of Scotland (Draft)

NoS Population

- 119 Adult MT cases per year which is 15% of total national MT cases. (approx 10 cases a month & 2-3 a week)
- 30 serious/major trauma children’s cases estimated per year. This is 17% of national paediatric MT activity. (2-3 cases per month in NoS)
- Incidences 54% between 6pm-8am and 46% 8am – 6pm (need GEOS data split – 8pm to midnight & midnight to 8am)

National Planning Assumptions

- 100% overtriage rate (MTOG)
- Transfer direct to MTC if <45 mins transfer time
- Single National MT Network of which NoS MT Network is a component
- Overall aim is to reduce mortality & increase functional outcomes of MT patients

Speciality Input in ED - for MT Adults (STAG)

- 99% Emergency Medicine
- 36% Anaesthetics
- 30% Orthopaedics
- 4% Cardiovascular
- 31% General Surgery
- 8% Neurosurgery
- 2% Radiology
- 7% Other

Potential Rehab Requirements Based on NE England Data (MT Adults)

Level of Rehab:

- 22% (26) of cases require level 1 specialist rehab
- 29% (35) of cases require level 2 specialist rehab
- 49% (58) of cases require level 3 rehab
- 70% (83) could require vocational rehab

Nature of Rehab by Principle Injury:

- 51% (61) cases would require rehab neurotrauma injuries
- 8% (10) cases would require rehab for MSK injuries
- 16% (19) cases would require rehab for mixed injuries
- 25% (30) cases would require rehab for other principle injuries (chest, vascular, abdominal etc)

Length of Stay for Adults (STAG)

- 43% of MT Patients stay in hospital > 14 days.
- 26% 3 – 7 days.
- 23% 8 – 14 days.
- 8% 1 – 2 days.

37 (31%) adult cases to the nearest Trauma Unit/LEH for resuscitation & initial care.

This affects:

- Orkney population
- Shetland population
- Highland population

? Need to add in Highland model re transfer to Raigmore as TU or direct to MTC.

- Need to reflect PHC data when available

GEOS Data

STAG / Local Data / English Data

? How many stay within Raigmore Trauma Unit.

How many repatriated back to Raigmore.

Speciality / Area Adult MT Patient Transferred To (STAG)

- 1% Emergency Medicine
- 6% Intensive Care
- 8% Ward
- 6% Spinal
- 69% Neuro

82 (69%) adult cases to ARI as Primary Admission. (0.3 per day)

70% transferred to ED resus

Only if retrieval / transfer within 45 mins

\[\text{<45 min} \] transfer (0.6 per day including overtriage rate)

37 (31%) Secondary transfer (1 every 10 days)

70% transferred to ED resus

\[\text{>45 min} \] transfer*
Appendix 6

Summary Report on the ‘Modelling of the Proposed Four-MTC Trauma System Configuration for Scotland’

Background

MTOG commissioned Mr Jan Jansen to produce a report on the ‘Modelling of the Proposed Four-MTC Trauma System Configuration for Scotland’ which would inform MTC activity based on the recommendation to have four MTCs as part of one national trauma system for Scotland. This report was circulated in December 2014.

The report was based on the Geospatial Escalation of Systems (GEOS) data which was collated between 1st July 2013 and 30th June 2014, which included a prospective notional triage of all injured patients.

Summary

Key points of the report and assumptions specifically relating to the NoS are outlined below.

• Nationally, the data showed that during the 12 month period that 80,257 individuals had been injured and of which 8.81% (7,095) were triaged to MTC care, 41.8% (33,564) to trauma unit care and 49.3% (39,592) to local emergency hospital care.

• Nationally, 93.8% of patients should reach triaged destination within 45 minutes across Scotland. An assumption could be made that the majority of those who did not meet the 45 minute standard could be from the NoS.

• It seems unlikely that there will be any major changes to flow of MT patients across the NoS (and to the MTC) if retrieval/transfer capability and capacity remains unchanged. This is based upon the geographical constraints of the NoS, along with the agreed 45 minutes access time threshold.

• Total of 119 severely injured/MT cases a year in the NoS. Based on 45 minute transfer standard, 82 would be primary admission and 37 would be secondary transfer. This equates to approximately 2-3 major trauma cases per week. The number of primary admissions will only occur if the appropriate retrieval capacity and capability is in place nationally.

• 81.1% of all MTC patients (1.6 per day) require primary helicopter referral. For the North of Scotland this would equate to 0.9 per day from the Inverness depot. This will only occur with further investment.

• Estimated number of primary admitted cases triaged to TU care per year in Aberdeen is not expected to change significantly.

The GEOS report is expected to be produced in the coming months and will provide further intelligence to inform local, regional and national modelling of major trauma care.
Outline of Calculations for Major Trauma Paediatric Activity for Scotland and the North of Scotland

Background
There is no mechanism currently for collating and understanding major trauma (MT) activity across the NoS or regionally. There are however future plans to collate paediatric MT data via STAG. In the meantime it has been proposed nationally that regions use the below activity assumptions for planning until robust data is available to inform activity and outcomes.

Projected Paediatric MT Activity for Scotland
Calculations are based upon the MT activity data for paediatrics produced by North West England (assumptions below) and The Trauma Audit and Research Network (TARN), the English and Welsh MT audit network.

The population in North West England is 7.8 million with 1.5 million children <16 years of age. Data for the period 1st April 2013 to 31st March 2014 shows that they had 121 cases Injury Severity Score (ISS)> 15 (major trauma) and 139 cases ISS 9-15 (moderate trauma) per year.

Using this intelligence, this would therefore mean that based on 2013 population data, Scotland with an approximate population of 1 million children, would expect approximately 82 cases ISS >15 (major trauma) and approximately 94 cases >8-15 (serious/moderate trauma) per year across Scotland. From a geographical basis across the four regions, based on population and usual pathways, this would equate a crude split as outlined in the table below.

<table>
<thead>
<tr>
<th>Board/ Paediatric Centre</th>
<th>Total No. Cases ISS&gt;15 (major trauma)</th>
<th>Total No. Of Cases ISS&gt;8-15 (moderate trauma)</th>
<th>Average Per Month* (moderate &amp; major trauma)</th>
<th>Percentage of Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grampian</td>
<td>14</td>
<td>16</td>
<td>3</td>
<td>17%</td>
</tr>
<tr>
<td>Greater Glasgow &amp; Clyde</td>
<td>41</td>
<td>47</td>
<td>7</td>
<td>50%</td>
</tr>
<tr>
<td>Lothian</td>
<td>17</td>
<td>20</td>
<td>4</td>
<td>21%</td>
</tr>
<tr>
<td>Tayside</td>
<td>10</td>
<td>11</td>
<td>2</td>
<td>12%</td>
</tr>
<tr>
<td>Totals</td>
<td>82</td>
<td>94</td>
<td>16</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Numbers rounded to the nearest highest numerical value

What Does this Mean for NoS?
In relation to paediatrics, a calculation of MT activity based on trauma data produced in North West England it could be extrapolated that a total of 30 moderate/major trauma cases per year would go to Aberdeen Royal Children's Hospital/MTC. This would equate to approximately 3 trauma cases per month. This would equate to 17% of total paediatric MTC activity.

These calculations will require to be amended to reflect any further intelligence or any agreed national changes to patient flow or the pathway for MT across Scotland.

References
2. TARN North West Children's Hospitals. The Trauma Audit & Research Network.
Appendix 8

Assumptions for the North of Scotland Major Trauma Network re Rehabilitation Services Based on the North East England Rehabilitation Report

Background

There appears to be little or no robust data sources available on major trauma (MT) rehabilitation. However, the search on this topic has revealed the 'Transforming Trauma Rehabilitation Recommendation for the North East Region' document which contains trauma activity data from across the North East England Trauma Network.

This document crudely extrapolates the data from the North East England report and what this could mean for the North of Scotland (NoS) with the aims of guiding planning where no other robust source has been identified.

Rehabilitation for the purpose of this report includes all levels of generic and specialist components of rehabilitation delivered by all aspects of the multi-professional team.

Findings from North East England Trauma Network

Background

North East (NE) England Trauma Network comprises of two Major Trauma Centres (MTCs), nine trauma units and three A&E departments covering 3.1 million population. The service covers both adults and paediatrics.

The Network produced the 'Transforming Trauma Rehabilitation Recommendation for the North East Region' in order to provide information and recommendations to support the commissioning of future rehabilitation services for major and serious trauma. The aim of the network is 'to improve survival management and flow of patients though the trauma care system'. It is recognised nationally in England that rehabilitation is the weakest and most under-resourced part of the trauma pathway.

Rehabilitation Activity

We know that from a year to year basis there is likely to be little increase in MT activity within the NoS. These patients are already within the system but we know from our mapping work that MT and moderate trauma patients are not routinely screened for rehabilitation needs and therefore will not always receive the right level (or any in some cases) of input in relation to rehabilitation, affecting their ability to maximise their potential post trauma.

Based on the 119 MT cases predicted by the 4-MTC Reconfiguration Report, along with extrapolating the NE England findings in relation to rehabilitation, this would suggest that the following are requirements of the NoS MT Network.

Levels of Rehabilitation Care

Of the predicted 119 MT cases per annum, based on the 214 MT cases reviewed in the NE England Network, the following would be indicated within the NoS:
• 22% (26) of cases would require level 1 specialist rehabilitation per annum
• 29% (35) of cases would require level 2 specialist rehabilitation per annum
• 49% (58) of cases would require level 3 rehabilitation per annum

Nature of Rehabilitation Requirements – Adults (16+ years)
Using the NE England Network nine month data analysis in relation to principle injuries requiring rehabilitation, it could be crudely predicted that the following would be required based on the 119 NoS cases:
• 51% (61) cases would require rehabilitation for principle neurotrauma injuries
• 8% (10) cases would require rehabilitation for principle MSK injuries
• 16% (19) cases would require rehabilitation for mixed injuries
• 25% (30) cases would require rehabilitation for other principle injuries (chest, vascular, abdominal etc)
• Table below summarises the above assumptions for the NoS cases.

<table>
<thead>
<tr>
<th></th>
<th>CNS</th>
<th>MSK</th>
<th>Mixed</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>61</td>
<td>10</td>
<td>19</td>
<td>30</td>
<td>120</td>
</tr>
<tr>
<td>Percentage</td>
<td>51%</td>
<td>8%</td>
<td>16%</td>
<td>25%</td>
<td>100%</td>
</tr>
</tbody>
</table>

If we base the requirement of vocational rehabilitation on the estimated 70% of the MT population as highlighted by the NE England Network, this could mean that potentially 83 out of the 119 NoS MT cases would require vocational rehabilitation.

Summary
There are no robust data sources to model rehabilitation needs in relation to MT, however the ‘Transforming Trauma Rehabilitation Recommendation for the North East Region’ document could be valuable in guiding current rehabilitation planning within the NoS MT Network until more robust data is available.
Appendix 9a

MAJOR TRAUMA EXPERIENCE OF PATIENTS IN THE NORTH OF SCOTLAND

Day of the accident:

“I don’t remember anything until 2 or 3 days later”

“Last thing I remember before losing consciousness was staying up in the emergency room”

“I couldn’t bear the thought of being in a room with other patients”

“Was unaware of what was going on and relied on my wife and family to make decisions”

“I was aware of someone speaking to me and understood, I was trying to remember what someone said and try to follow instructions”

“I believe it took them 3 hours to get me off the cliff”

“I was awake for the first day of the incident and was up in hospital a few days later”

“There was a paramedic and an ambulance service technician I was not aware of any part of the transport until we arrived”

“I was very aware of the danger I was in”

“I don’t like having stuff on my face anyway so having an oxygen mask on was horrible. I felt it was being played with my face and that they were trying to kill me. I was in danger and at risk”

“Coping without something to hold on to was difficult. I needed someone to help me over the rocks on the beach”

First few days after the accident:

“I feel safe but when I went into a single room I was a bit concerned about keeping an eye on something”

“My main fear was that the nurses would do something to me, I felt so vulnerable”

“I was kept fairly well informed”

“I discovered I don’t like morphine. Makes me hallucinate like crazy”

“Once I knew I had lost my leg, I felt measured and calmed”

“Staff told me what they were doing to me, in a calming change, my leg, I couldn’t understand why I couldn’t get out of bed”

“First night in hospital, felt like I was in one of the films – I wasn’t eating enough and felt permanently nauseous”

First few weeks after the accident:

“Need to know how I was getting on. Am I getting the right care?”

“Did not find out about my injuries until 3 days later in A&E”

“I was kept fairly well informed”

“I discovered I don’t like morphine. Makes me hallucinate like crazy”

“Once I knew I had lost my leg, I felt measured and calmed”

“Staff told me what they were doing to me, in a calming change, my leg, I couldn’t understand why I couldn’t get out of bed”

“The most difficult thing was living with the pain”

“First few nights in hospital felt like I was in one of the films – I wasn’t eating enough and felt permanently nauseous”

Planning for home / transfer:

“When I was ready for home there was a plan in place. I had a home visit to identify and address any problems”

“Had informed my doctor about my care but I couldn’t have been more informed anything anyway”

“My up on the day that I should have gone home. They thought I needed oxygen so wouldn’t take me. That was frustrating”

“When the ambulance service was only there for one of us, I felt a stretcher was not wanted. The ambulance service had to return for him to pick up other patient. It was a long wait on a very uncomfortable stretcher on the aircraft”

“I have no questions about my discharge, there was no need to speak to people on discharge. Good planning has definitely given me a boost”

“I knew what the plans were for me to get home. I felt a lot calmer”

“The staff planned to let me have a day out. Then I had one night at home, then two nights at home. It really helped me to overcome my fears”

Ongoing care and support:

“There should be one named nurse looking out for you – a Major Trauma Nurse. Someone who has time to spend with you, who knows what the plans are for you and can give you information on length of stay and what support you will require”

“I still don’t realise how big it was – the doctor said I had left my bone on the road”

“Ongoing adaptation required due to injuries”

“Capacity to work in the future needs to be considered as part of care for those with life changing injuries”

“The nurses have been brilliant. Preparing me for home and they have organised care packages for me”

“The district and practice nurses have both been in to see my dressing and been shown how to do them”

“The OT has been excellent. All the equipment I have needed has been taken to my home for getting home”

“GP was very supportive”
Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015

Appendix 9b

MAJOR TRAUMA EXPERIENCE OF CARERS IN THE NORTH OF SCOTLAND

Day of the accident:

"It was important that we saw him and he was alive"

"If he didn’t have any tattoos we would not have known it was him – we want to erase that image from our minds"

"It felt like a sick, co-ordinated process - professional, expert care"

"I was given regular updates when I phoned A&E"

"Unfortunately, there was no room on the flight - this was distressing. It was hard to say goodbye. I knew he was in safe hands, but I felt terribly guilty at not being with him and worried as I was so far away and stranded"

First few days after the accident:

"The unknown is the worst thing you need to know the plan even if it is good or bad"

"I gave staff nicknames as we could not remember their names"

"Nurse explained how I would find him and the plan for his care that day"

"Nurse explained to me about the possibility of the media getting in contact with me at the hospital"

"Nurse kept in contact with me by telephone several times during his surgery"

"Staff were all helpful but I found out about his injuries in a very impersonal fashion. Perhaps because so many different people spoke to me, I didn’t get a full picture until around 6am on the 4th day after the accident"

"My son was also on this ward as a patient. The nurses wheeled him through to HDU to see me"

"It was OK, other folk saying me they were OK but I wanted to see for myself - I felt useless as a mother"

First few weeks after the accident:

"Staff were kind but rushed off their feet and did not have time to stop and explain"

"We would tend complaining of pain and requiring care but not being attended to - this made me feel angry"

"Difficult to contact ward by telephone. Impossible to speak to anyone face to face"

"It was so nice to have family around"

Planning for home transfer:

"No one came to discuss with me the plans for his care or to find out if I needed support"

"When they were planning for transfer to Balhousie, no-one told me of planned dates so I couldn’t arrange to get home at the same time"

"From the time of admission at Balhousie, plans to get him home started. This was organised and we were included in the planning"

"I came home from work to find Peter in the dining room. I had no idea he was coming home"

"I was not involved in decisions about his care"

"I found it very difficult to get any timescale in which I was getting him home. Things were changing from hour to hour, from day to day, depending on who he talked to"

"We had a visit from the community nurse the day he got home. I telephoned Selbro and asked for a perching chair, which I collected and returned. We also ordered a car seat from abroad so he could shower"

"The care and treatment from the teams in Balhousie was exceptional - made to feel cared for and supported"

Ongoing care and support:

"It was important that we were surrounded by people in similar situations. We had mutual understanding"

"He has finished with that part of his life now and can move on - he has chosen"

"Craig was very sad about his rehab programme, he just wanted home"
MAJOR TRAUMA EXPERIENCE OF STAFF IN THE NORTH OF SCOTLAND

Day of the accident:
"Often we spend a lot of time trying to speak to a specialist or arranging transfer of the patient. This means we spend less time with the seriously ill patient, especially when we have limited staff.”
"EMRS teams are excellent but time to transfer can be variable. Response needs to be reliable and sustainable for island populations”

"In some cases, the casualty arrived on the helicopter within 30 minutes of the accident, but in other cases it took over an hour. The time to arrival is crucial to the patient’s survival.

First few days after the accident:
"If the patient is in a specialist unit, there can be a delay in their transfer once the patient is stable enough to be transferred.”
"Patient care can be delayed and compromised because nurses are busy in other areas.

"Sometimes, there can be a delay in specialist opinion which can delay further decision making and treatment.

First few weeks after the accident:
"Staff in the HDU do not always have the skills to manage polytrauma patients. They have the skills to look after the patients which the polytrauma patients require.

"Dedicated polytrauma beds are required along with a dedicated medical team.

"Advanced Nurse Practitioners, Physiotherapists and ITU Support Nurses should all feature in a MTC.

"There needs to be a dedicated physiotherapy input for patients with polytrauma and the acute pain team need to be alerted to these patients quickly.

"There is no formal mechanism for staff support - sometimes we see the situations and the people we deal with, there needs to be a mechanism for support and debrief.

Planning for home / transfer:
"Often we don’t know the patient is coming until the patient is sitting in the transfer vehicle.

"There is rarely any prior planning between Stornoway and the Intensive Care Unit.

"There are gaps in acute medical and support for patients with polytrauma – this is a major gap in care.

"Communication between staff and with patients and their families can be poor. This is due to staffing levels.

Ongoing care and support:
"Good to have an accessible point of contact for further advice and review if required.

"There are gaps in community rehabilitation capacity and provision.

"When we have used technology to provide rehabilitation, support staff (the therapists) - we need to do more of this.

"Access to physiotherapy and occupational therapy needs to be improved.

"Access to social care can also be a challenge.

"Looking after trauma patients with ongoing complex needs can be a significant challenge for community teams due to the skills required and suitability of care.

Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015

Appendix 9c
Appendix 10

Governance & Reporting for North of Scotland Major Trauma Programme

Board CEO & Chairs

National Planning Forum (NPF)
Chair: Michael Kellet
NoS Reps: Board Planning Directors & Regional Planning Director

Major Trauma Oversight Group (MTOG)
Chair: Alex McMahon
NoS Rep: G Smith, P Williams & J Cannon

West of Scotland Planning Group
Representatives: Grampian, Highland, Orkney, Shetland, SAS, Western Isles

North of Scotland Planning Group (NoSPG)
Chair: Elaine Mead
(Includes Boards CEO’s, Chairs & Relevant Directors)

NoS Major Trauma Programme/Network Group
Chair: G Smith/P Williams
Meets: 6-8 weekly

Task & Finish Groups:
- Pre-hospital, Transfer & Retrieval
- Aberdeen MTC Implementation
- Rehabilitation & Repatriation
- Paediatrics
- Patient/Carer/Staff Experience
- Workforce & Education

Individual Boards Governance/Reporting & Decision Making Arrangements

Individual Board Governance Structures

National MT Network

NoS MT Network

Version 7 – August 2015

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## MAJOR TRAUMA OVERSIGHT GROUP (MTOG)

- **Chair:** G Smith
- **Meets:** 6-8 weekly
- **Role:** Provide collective leadership in the development of the NoS MT network which delivers timely high quality, person-centred, safe, sustainable and affordable MT care
- **Members:**
  - NOSPG: Jim Cannon, G Lawrie/L Mitchell, P Williams, G Smith and L Scott
  - Grampian: S Carr, F Francey, N Fluck, P Hardy/S Dusitan, J Nicoll & A Ingram
  - Highland: R Harvey & D Smith
  - Orkney: C Chalmers
  - Shetland: R Diggle
  - SAS: A McIntyre, Neil Sinclair, S Phillips, and A Fuller
  - Western Isles: J Myles
  - Chairs of Task & Finish Groups

### North of Scotland Planning Group (NOSPG)

#### NoS Major Trauma Programme Group

- **Chair:** G Smith
- **Meets:** 6-8 weekly
- **Role:** Provide collective leadership in the development of the NoS MT network which delivers timely high quality, person-centred, safe, sustainable and affordable MT care
- **Members:**
  - NOSPG: Jim Cannon, G Lawrie/L Mitchell, P Williams, G Smith and L Scott
  - Grampian: S Carr, F Francey, N Fluck, P Hardy/S Dusitan, J Nicoll & A Ingram
  - Highland: R Harvey & D Smith
  - Orkney: C Chalmers
  - Shetland: R Diggle
  - SAS: A McIntyre, Neil Sinclair, S Phillips, and A Fuller
  - Western Isles: J Myles
  - Chairs of Task & Finish Groups

#### NoS Workforce Planning Learning Network

- **Chair:** G Lawrie/L Mitchell
- **Role:** Co-ordinating the development and agreement of the Workforce Plan

#### NoS Pre-Hospital & Retrieval Group

- **Chair:** P Williams
- **Meets:** 6-8 weekly
- **Role:** Lead on the development and implementation of plans to deliver the standards and components relating to pre-hospital and retrieval care of the network
- **Members:**

- **Specific Links:**
  - National Triage & Tasking Grp
  - MTC & Non-MTC Hospital Grps
  - National Major Incident Response

#### NoS Workforce & Education Group

- **Chair:** L Scott (temporary)
- **Meets:** 8-12 weekly
- **Role:** Lead on the development and implementation of plans to support workforce skills development and maintenance for delivery of MT pathway
- **Members:**

#### Aberdeen MTC Implementation Group

- **Chair:** N Fluck
- **Meets:** 6-8 weekly
- **Role:** Lead on the development and implementation of plans to deliver MTC Services in Aberdeen
- **Members:**
  - P Bichoo, P Bhath/P Bodkin

- **Specific Links:**
  - NoS Pre-Hospital & Retrieval Group
  - NoS Rehab & Repatriation Group
  - NoS Non-hospital Flow & Support Group

#### NoS Rehabilitation & Repatriation Group

- **Chair:** S Carr
- **Meets:** 6-8 weekly
- **Role:** Lead on the development of plans to deliver the standards and components relating to rehab & repatriation
- **Members:**

- **Specific Links:**
  - National Rehabilitation & Repatriation Group
  - Aberdeen MTC Group
  - NoS Non-hospital Flow & Support Group

#### Patient, Carer & Staff Experience

- **Chair:** L Scott
- **Meets:** Now Virtual
- **Role:** Oversee the collation and sharing of experience to inform developments/ planning of MT care/pathway across NoS.
- **Members:**
  - D Cooper, J Falconer, M Fraser, D Cooper, J Falconer, M Fraser, C Hand, M Morrison, J Scott, L Scott, D Symington, J Tait, H Tennant & M Thompson

- **Specific Links:**
  - All Task & Finish Groups and local Board workstreams

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**Appendix 11 (being reviewed/updated)**

*Please provide any further comments/amendments to lscott@nhs.net by 5pm on Wednesday 26th August 2015*
Appendix 12

Outline of Development of NoS MT Implementation Plan

To Be Added