REGIONAL TRAUMA NETWORKS

NHS CLINICAL ADVISORY GROUP ON MAJOR TRAUMA WORKFORCE

CFWI Regional Trauma Network Team
March 2011
TABLE OF CONTENTS

1 Introduction ........................................................................................................................................ 1
2 Overview ........................................................................................................................................ 6
3 Rehabilitation medicine ............................................................................................................. 14
4 Therapists ...................................................................................................................................... 18
5 Essential nursing services ........................................................................................................ 29
6 Network coordination roles ....................................................................................................... 33
7 Ambulance staff .......................................................................................................................... 34
8 Emergency medicine ................................................................................................................ 37
9 Clinical radiology ....................................................................................................................... 43
10 Interventional radiology ............................................................................................................ 46
11 Diagnostic radiography ............................................................................................................ 48
12 Anaesthetics ............................................................................................................................. 51
13 Operating department practitioners ....................................................................................... 54
14 General surgery ....................................................................................................................... 56
15 Trauma & orthopaedic surgery ............................................................................................... 59
16 Neurosciences (neurosurgery) .................................................................................................. 63
17 References .................................................................................................................................. 65
1 INTRODUCTION

This document provides a national-level overview of the likely workforce pressure points in establishing Regional Trauma Networks (RTNs). It is intended to facilitate the successful foundation of RTNs over the next twelve months. It should be used as a guide to focus on the likely workforce pinch-points but it is recognised that there will be considerable regional variation and locally some workforce groups, not highlighted by this review, may require scrutiny.

The Centre for Workforce Intelligence (CfWI) major trauma pathway workforce map is shown on the next page. This illustrates the different workforce groups and teams involved in each stage of major trauma care. Each workforce group is colour coded according to the likely resourcing impact of forming RTNs:

- Workforce groups coloured green are likely to be able to absorb the impact of RTNs with no additional resource.
- Workforce groups coloured amber are expected to be able to absorb the impact of RTNs with some extra resource.
- Workforce groups coloured red have exceptional need for attention or will potentially be new services or require new skill-sets.

Only the workforce groups coded amber or red on the trauma pathway workforce map will be examined in detail. This document should be read in conjunction with the NHS Clinical Advisory Group’s (CAG) report ‘Regional Trauma Networks for Major Trauma’ (2010).

The workforce risks outlined in this document were determined through a literature review of trauma policy documents; a workforce drivers survey distributed to members of the CAG for completion; further supplementary interviews with CAG members; feedback received from an interim report circulated to CAG members in October and the input of one of the CfWI’s medical advisors (a consultant in emergency medicine). In order to establish the red, amber, green (RAG) status of each of the workforce groups indentified in this document, CfWI’s medical advisor created an initial pathway design. This was then critiqued by the CAG to ensure the pathway is as valid as possible. All data sources used in the analyses are clearly referenced.

Most of the workforce data has been taken from the most recent NHS Information Centre census, which provides staffing numbers as of September 2009. Although the data is now somewhat out of date, it is fully verified and is the least controversial centrally-held workforce data currently available.
For each staffing group identified as red or amber in the major trauma pathway, the risk analysis considers the following areas:

**Risk:** The identified risk facing each workforce group – the reasons why they are colour coded as amber or red.

**Scale:** Will the identified risk have a network-wide impact, or are its effects concentrated at the trauma unit (TU) or major trauma centre (MTC) level?

**Potential solutions:** Potential mitigating strategies for the identified risk. Many of the potential solutions may require changes to how existing staff currently work. Others may involve a refocusing of funding to strengthen workforce numbers in relatively under-resourced areas or the creation of entirely new roles. The majority of the risks highlighted in this report can be met by reconfiguring and, where necessary, retraining the existing workforce.

**Timescale:** How quickly can the identified risk be addressed? Are there short-term as well as medium-term solutions?

**Data limitations:** Outlines any limitations with the data sources used for each workforce group.

**Expert comment:** For some staff groups, an expert comment is included on the issues facing the workforce. These expert views are directly attributed to the person who provided them.

The report begins by considering the major staffing groups involved in major trauma rehabilitation services (rehabilitation medicine, therapies and essential nursing services). Following this, the analyses are ordered according to the flow of the major trauma care pathway, starting with the network coordination roles.

A summary table outlining the risk analysis for each workforce group is provided ahead of the full analysis (see page 6).

1.1 **Limitations**

This report takes a national perspective. The workforce groups colour coded amber and red may not be problematic in every region. Similarly, workforce groups colour coded as green may face issues in individual regions. The precise, regional implications of establishing RTNs will be determined by the model of care adopted by each network, which will vary according to local service geography and network design.
There are some serious data limitations around the major trauma workforce. While overall staffing numbers are available regionally for each of the main staff groups involved in major trauma, the data often lacks granularity. For example, although issues have been identified around specific nursing groups within the major trauma pathway, currently available data on the nursing workforce do not accurately record each individual nurse’s area of work. As such, it is difficult to produce a meaningful quantitative analysis of the nursing groups involved in trauma. However, wherever relevant and possible, quantitative workforce data has been included as part of each workforce group analysis. The report’s appendices provide supplementary Strategic Health Authority (SHA)-level information on the number of qualified staff and trainees for each workforce group considered in the report.

Some of the issues highlighted in this document are evidenced qualitatively, from the personal and professional experience shared by the CAG membership. These issues have only been included where it is felt that this experience is reliable and pertinent. Other identified issues are concerned with the training and education gap rather than overall workforce supply. Many workforce groups should have sufficient numbers of staff to establish RTNs but there are indications that existing staff will need further training and experience in major trauma to provide the desired standard of care.

1.2 Acknowledgements

We would like to thank those who gave up their time to contribute to the development of this document, including Mr Robert Greatorex, Royal College of Surgeons England Lead for Workforce; Dr Erika Denton, Consultant Radiologist and National Clinical Director for Imaging, Department of Health; Professor Robert Crouch, Consultant Nurse, Emergency Department, Southampton University Hospitals NHS Trust; Alan Dobson, Nurse Advisor - Acute and Emergency Care, Royal College of Nursing; David Whitmore, Senior Clinical Advisor to the Medical Director, London Ambulance Service NHS Trust; Jim Petter Director of Professional Standards, College of Paramedics and Senior Lecturer in Paramedic Science, University of West England; Dr Krystyna Walton, Consultant in Rehabilitation Medicine, Salford; Rebekah Middleton, Clinical Specialist Physiotherapist – Neurosciences & Senior Project Officer, London Trauma Office; Dr Andrew Hobart, Emergency Medicine Consultant & Trauma Director, Princess Royal University Hospital, South London Healthcare NHS Trust; Dr Bob Winter, President of the Intensive Care Society and Consultant in Intensive Care Medicine; Lt. Col Nigel Tai, Consultant Surgeon in General, Trauma, Vascular, Emergency & Critical Care Surgery, Barts and The London NHS Trust in London; Mr Gavin Bowyer, Consultant Trauma & Orthopaedic Surgeon, Southampton University Hospitals NHS Trust; Peter Hutchinson, Reader and Honorary Consultant Neurosurgeon, Addenbrooke’s Hospital, University of Cambridge; Dr
Rod Mackenzie, Consultant in Emergency Medicine and Pre-hospital Emergency Medicine; Professor Chris Dodds, The James Cook University Hospital NHS Foundation Trust and Royal College of Anaesthetists; Professor Jacky Hayden, Postgraduate Dean, North West Deanery and Chair of English Deans; Professor Sarah Thomas, Lead Dean, Yorkshire and Humber Deanery; Hugo Mascie-Taylor, Medical Director, NHS Confederation; Dr James Hickman, General Practitioner, Somerset, BASICS Doctor and Royal College of General Practitioners; Dr Howard Simpson, Consultant Emergency Physician, Basingstoke and North Hampshire NHS Foundation Trust and Medical Advisor, Centre for Workforce Intelligence; Professor Keith Willett, National Clinical Director - Trauma Care and Aidan Slowie, Nurse Advisor to the National Clinical Director for Trauma Care and Emergency Department Modern Matron, King’s College Hospital NHS Foundation Trust.
2 OVERVIEW

The table below summarises the key workforce risks likely to be faced in establishing RTNs.

<table>
<thead>
<tr>
<th>Workforce group</th>
<th>Risk</th>
<th>Scale</th>
<th>Potential solutions</th>
<th>Timescale</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>Rehabilitation</td>
<td>Small number of staff in the current workforce with increased</td>
<td>Network</td>
<td>Role identification of Clinical Director of Rehabilitation Trauma and specific</td>
<td>Extra training can be provided to the existing workforce in the short-term. This will</td>
<td>16</td>
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<tr>
<td>medicine</td>
<td>responsibilities from RTN formalisation. Geographically uneven</td>
<td>wide</td>
<td>training for the existing workforce. Adjustments to training curriculum for future</td>
<td>remain a small workforce for the foreseeable future. Utilisation of unfilled rehabilitation</td>
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<td></td>
<td>distribution of staff and skills, particularly in trauma and</td>
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<td>workforce.</td>
<td>national training numbers.</td>
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<td>musculoskeletal rehabilitation.</td>
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<tr>
<td>Therapists (overarching risks)</td>
<td>Therapy intervention is an essential component of major trauma care. The rehabilitation needs of this patient group are poorly understood. The current provision, especially of complex and specialist rehab, is very likely to be insufficient. Current resources at acute hospitals are often insufficient to allow therapy to commence early in the pathway. The establishment of multi-disciplinary rehabilitation teams will require a level of service reconfiguration as teams will need to be wholly structured as multi-disciplinary team units, as opposed to teams based around individual professions. Implementing lead clinician and network co-ordination.</td>
<td>Issues are network wide, as the successful implementation of RTNs will require acute rehabilitation of major trauma patients from an early stage. The scale of the issue is currently difficult to properly assess but it is anticipated to be significant. Data on patient volumes, dependency, therapy requirements and outcomes is not routinely collected or analysed. However, the impact of RTN on therapists is likely to extend across the whole pathway.</td>
<td>Many of the issues around delivering acute rehabilitation services, early in the patient pathway, may largely require additional training and a level of service reconfiguration. Achieving enhanced capacity and flexibility of existing services will require patient pathway mapping and joint working between commissioners and clinicians. The establishment of multi-disciplinary teams within all MTCs will necessitate reconfiguring rehabilitation services, which are often organised around individual professions. Vocational rehabilitation.</td>
<td>Many of the immediate workforce issues can be mitigated through additional training and service reconfiguration. There may be some areas where increased resourcing could be required, such as within the community setting. MDRTs and new rehabilitation coordination roles should be established within the first year of operations.</td>
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<tr>
<td>Essential nursing services</td>
<td>Requirement for dedicated 24/7 major trauma emergency theatre at MTCs; theatre nursing is a shortage occupation. Higher number of cases presenting at MTCs, with increased severity and acuity; more complex case mix. Lack of specialist trauma nurses to staff dedicated trauma ward at MTCs. Inter-hospital transfer responsibilities.</td>
<td>Largely at MTCs</td>
<td>Specialist training programmes. Elements of routine elective work potentially moving from MTCs to other providers in the network.</td>
<td>Contingent on local nursing resources and expertise.</td>
<td>31</td>
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<td>Workforce group</td>
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<tr>
<td>Network coordination roles in pre-hospital, acute care and rehabilitation</td>
<td>New roles which will need to be appointed from existing staff, potentially reducing capacity in other services.</td>
<td>Network-wide issue.</td>
<td>These roles may be new or extensions of previously established coordinator roles (especially trauma nurse coordinators). Job share arrangements or shared rotas to allow maintenance of clinical practice.</td>
<td>Staff can be appointed to roles as soon as required but impact on other services will have to be assessed locally.</td>
<td>35</td>
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<tr>
<td>Ambulance staff</td>
<td>Accuracy of implementation of pre-hospital triage and decision-making. Increased length of primary transfers. Increased demand for immediate inter-hospital transfers not balanced by call backs for interval transfers.</td>
<td>Network-wide</td>
<td>Locally assess existing level of staff. Shift in technician to paramedic skills mix. Support from enhanced care team in pre-hospital care.</td>
<td>Large numbers of paramedic staff; possible to resolve in the short-term with training.</td>
<td>36</td>
</tr>
<tr>
<td>Emergency medicine</td>
<td>Workforce shortages at consultant, middle grade and trainee level. Services currently delivered using a relatively junior consultant-level doctors in emergency medicine</td>
<td>Impact will depend on the number of TUs in the region and the number of consultant-level doctors in emergency medicine</td>
<td>Use of other specialties to provide the trauma team leader position. Rotate interested EM consultants from non-medicine.</td>
<td>Multispecialty rotas may be used to solve problem in the short or long term. For EM alone long-term</td>
<td>39</td>
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<td>Workforce group</td>
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<tr>
<td>Workforce. Unevenly geographically distributed. High vacancy rates. Current consultant rotas favour daytime, weekday shifts out of synch with trauma workload</td>
<td>available. Scale of problem dependent on the number of individual consultants from other specialties available and willing to take trauma team leader role. If emergency medicine-led model of care adopted across whole RTN, high demand for emergency medicine staff.</td>
<td>MTC hospitals into MTC rota. Incentivise staff to work extra shifts. Consideration to career progression and structure. International recruitment.</td>
<td>sustainability will depend on sufficient supply of CCT holders.</td>
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<tr>
<td>Clinical radiology</td>
<td>Increased requirement for scanning capacity. Immediacy of availability and expertise in consultant grade reporting of acute trauma scans.</td>
<td>TUs may be particularly affected. Impact will depend on how well resourced each region's hospitals are, as well as geography and infrastructure.</td>
<td>Development of rotas, including consideration of regional telemedicine links to allow with centralised reporting of all trauma CTs in network across network.</td>
<td>Should be possible to resolve in the short-term.</td>
<td>45</td>
</tr>
<tr>
<td>Intervventional radiology</td>
<td>National availability of interventional radiologists.</td>
<td>MTC issue; impact contingent on level of interventional radiology capacity within each region.</td>
<td>On-call rotas should be established; the requirement for interventional radiology services is likely to be</td>
<td>Longer-term risk. RTN regions will need to assess what interventional radiology workforce levels are</td>
<td>48</td>
</tr>
<tr>
<td>Workforce group</td>
<td>Risk</td>
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<td>Potential solutions</td>
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<tr>
<td>Diagnostic radiography</td>
<td>National undersupply.</td>
<td>Greater impact at MTC.</td>
<td>Review local supply.</td>
<td>Longer term.</td>
<td>50</td>
</tr>
<tr>
<td>Anaesthetics</td>
<td>Increased activity in MTC.</td>
<td>Major demand will be increased activity in MTCs and support for “immediately available operating theatre”. Impact will depend on allocation of on-call anaesthetist of sufficient seniority in rota structure to support trauma theatre. Formal recognition of currently sufficient supply of anaesthetists; possible to resolve in the short-term.</td>
<td>Currently sufficient supply of anaesthetists; possible to resolve in the short-term.</td>
<td>53</td>
<td></td>
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<tr>
<td>Workforce group</td>
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<tr>
<td>Operating department practitioners</td>
<td>Shortage occupation. Dedicated 24/7 major trauma emergency theatre at MTCs.</td>
<td>geographical spread of TUs in a RTN. The more exclusive the model the less the impact for transfer support.</td>
<td>transfer role. Consideration of role of Critical Care network/MERIT team/pre-hospital trained team for composite function in the future</td>
<td>Contingent on local supply of ODPs. Efforts could be concentrated on bringing agency staff back into direct employment within the NHS.</td>
<td>56</td>
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<tr>
<td>General surgery</td>
<td>The 24/7 availability of appropriately trained and experienced consultants in general surgery.</td>
<td>Consultant general surgeons at MTCs are likely to have significantly increased major trauma responsibilities.</td>
<td>Training in damage control surgery and early total care. Development of a cohort of general surgeons with a defined commitment to trauma.</td>
<td>Providing existing general surgery consultants with relevant trauma specific training should be achievable relatively quickly. Training a new cohort of trauma specialised general surgeons is a</td>
<td>58</td>
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<tr>
<td>Workforce group</td>
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<tr>
<td>Trauma and orthopaedic surgery</td>
<td>Impact of 24/7 availability of consultant-level staff on electives.</td>
<td>MTCs will receive the majority of major trauma patients with the highest operative workload of all specialties. Duty trauma and orthopaedic consultants at the MTC should therefore expect to be involved with major trauma cases and performing emergency orthopaedic surgery for a larger proportion of their time, both in-hours and out-of-hours.</td>
<td>Development of attractive and workable rotas. Division of planned and emergency into separate work streams within and possibly between hospitals.</td>
<td>Sufficient consultant numbers should allow rotas to be restructured relatively quickly.</td>
<td>61</td>
</tr>
<tr>
<td>Neurosciences (Neurosurgery)</td>
<td>Neurosurgery is a relatively small specialty (213 FTE in England as at 2009) and consultant posts are in a concentrated number of units. The establishment of RTNs is likely to increase workload.</td>
<td>Largely at MTC level where a consultant neurosurgeon will be required within 30 minutes. Though consultant neurosurgery input will be required throughout networks.</td>
<td>Access to neurological rehabilitation services could be expanded to reduce the dependence of patients with mild-moderate brain injury on acute settings of care. Staff may be encouraged to work extra shifts through incentives.</td>
<td>There is a fairly strong forecast supply of consultants, but posts are likely to remain concentrated around specialised neurosurgery units.</td>
<td>65</td>
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3 REHABILITATION MEDICINE

3.1 Risk

To meet the demands of MTCs without compromising care for patients already managed by rehabilitation services, RTNs are likely to create increased demand for doctors in rehabilitation medicine. The CAG report recommended that each RTN should appoint a clinical director of trauma rehabilitation, to coordinate the rehabilitation services required and available for trauma patients. The CAG report recommends that, where possible, this position should be filled by a consultant in rehabilitation medicine. The 2010 Information Centre census recorded 97 FTE (105 headcount) consultants in rehabilitation medicine as of September 2009. Due to the small number of staff in the current workforce, demand for rehabilitation medicine services from major trauma may result in existing rehabilitation services for other patients being compromised.

Rehabilitation medicine staff and services with specific skills in trauma and musculoskeletal rehabilitation are particularly important for RTNs; yet many current rehabilitation medicine services are focussed on neurological rehabilitation (Royal College of Physicians, 2010). This deficiency may be heightened in some regions by the uneven distribution of rehabilitation medicine services in England. Figure 1 shows the number of rehabilitation medicine consultants per 100,000 population, which ranges from 0.28 in North West SHA to 0.10 in the East of England.

Figure 1 – Rehabilitation medicine consultants (FTE) per 100,000 population

Sources – 2009 NHS Information Centre census (2010), Office for National Statistics population data
3.2 Scale

- Shortage of capacity within rehabilitation medicine has implications at both the MTC and the network level, as well as in delivery of complex and specialist rehabilitation services following discharge.

- Each MTC will need a full multi-disciplinary acute rehabilitation team, led by a consultant in rehabilitation medicine. This consultant will have overall clinical responsibility for the rehabilitation of patients in the MTC and during their transition to post-acute rehabilitation services.

- Outreach sessions will be provided to TUs by rehabilitation medicine consultants from their linked MTC.

3.3 Potential solutions

- Role division may add another option for leading rehabilitation services. The clinical director of trauma rehabilitation role has non-medical component duties that may be delivered by senior allied health professionals or nurses, many of whom have senior management experience.

- The training of consultants in rehabilitation medicine could better reflect the needs of major trauma patients, with an increased emphasis on musculoskeletal rehabilitation. Clinicians in rheumatology, orthopaedic medicine and surgery and primary care have led the development of musculoskeletal rehabilitation in recent years, leading to a focus on the impairment level of an injury rather than its ongoing improvement (Royal College of Physicians, 2010). This training need could be evaluated on an ongoing basis as networks become established. The current focus on RTNs may act to reinvigorate these aspects of specialty training and add new focus.

- The focus on coordination and patient management has clear training implications. Few rehabilitation medicine consultants are currently responsible for the ongoing management of patients in the early stage following an acute episode and will require training in this. Greater emphasis could be placed on acute rehabilitation in the rehabilitation medicine curriculum.

- In the longer-term, efforts should be made to raise the profile of rehabilitation medicine as a career option.
3.4 Timescale

In the short-term, where necessary and appropriate, trauma training will need to be provided to doctors in rehabilitation medicine. Amending the rehabilitation medicine curriculum to include more trauma specific content will produce longer term results. There is currently unfilled capacity in SpR training numbers in this specialty.

The number of consultants in rehabilitation medicine is not set to significantly increase in the medium-term. The consultant workforce shrunk by 9% during the past five years according to data recorded by the NHS Information Centre census. The supply of rehabilitation medicine consultants over the next ten years is forecast to increase to 113 FTE in 2018 (142 headcount), an average increase of 1.6% annually (Figure 2; Centre for Workforce Intelligence, 2010).

Figure 2 – Historical and future supply of doctors in rehabilitation medicine

Data limitations

Data for rehabilitation medicine staff has been taken from the most recent NHS Information Centre census, which provides staffing numbers as of September 2009. Although the data is now somewhat out of date, it is fully verified and is the least controversial centrally-held workforce data currently available. No data is currently available regarding the trauma-specific activity levels of doctors in rehabilitation medicine.
3.6 Expert comment

“In the context of rehabilitation following major trauma, to meet the demands of RTNs without compromising care for those patients already being managed by rehabilitation medicine services, an increase is required in the medical workforce at consultant and junior doctor / trainee levels. This will need to be paralleled by an increase in rehabilitation nurses and AHPs. It will not be possible, or appropriate, to develop new and separate services for rehabilitation following trauma.

Traditionally in England, other than in a few specialised acute neurorehabilitation services and in spinal injuries centres, rehabilitation medicine is practised in post-acute units often distant from an acute hospital site or in community settings. A change in emphasis to being involved in ongoing acute management of patients following major trauma will require changes to the curriculum to ensure that future consultants in rehabilitation medicine have the required skills. The North West Deanery has been allocated an additional training post to provide training in trauma rehabilitation, which will include vocational rehabilitation.

Rehabilitation medicine specialists will need to be able to work flexibly across care pathways, such that patients are cared for in the most appropriate environment for their individual needs, and have access to appropriate levels of expertise.

Co-ordination of the rehabilitation pathway will be crucial to the functioning of RTNs. This will require expertise, and therefore education and training.

It is acknowledged that rehabilitation is under-developed in England, and requires investment to meet the needs of patients who have sustained severe injuries.”

Dr Krystyna Walton, Consultant in Rehabilitation Medicine, Salford NHS Foundation Trust
4 THERAPISTS

Therapy intervention is an essential component of major trauma care. Priority attention is required to address the inadequacies that exist across the pathway and ensure that patients reach their optimal level of physical function and psychological well-being. This section outlines the overarching workforce issues associated with therapists in the establishment of RTNs, as well as the workforce risks facing five specific therapist workforce groups: occupational therapists, physiotherapists, speech and language therapists, prosthetists, orthotists and psychologists.

Major trauma is not recognised as a distinct specialism in these three professional groups. While data is available on the overall number of therapists employed within the NHS, no specific information is currently available on the number of therapists directly involved in rehabilitation or major trauma care. The analysis below is based on the limited amount of appropriate data currently nationally available. It is strongly recommended that a thorough trauma-specific data collection exercise is performed for the rehabilitation workforce. The new multi disciplinary team (MDT) structures recommended by the CAG may allow for higher quality data collection and for genuine activity levels for trauma to be recognised.

4.1 Risks

4.1.1 Overarching

A lack of rehabilitation and care co-ordination across the pathway results in delay and ineffective use of existing resources which further compromises patient outcomes. Delivering an acute rehabilitation service early in the patient pathway has a range of implications for the therapist workforce. Clinicians and Therapists should have the specialist skills needed to provide acute phase assessment and management of physical and non-physical morbidity occurring in major trauma patients. They should be able to deliver intensive and specialised rehabilitation services from the very early stages of care. Despite evidence confirming the importance of early rehabilitation in the critical care and acute ward environments, current resources at acute hospitals are often insufficient to allow intensive and holistic therapy to commence early in the pathway. Inadequate resource to address the breadth of patient needs (i.e. physical, psychological, vocational and social), risks costly long term complications and a negative impact on the patient’s long-term outcome. Staffing should also be sufficient to support input to trauma ward rounds, patient case conference and care and rehabilitation planning meetings.
Rehabilitation services in acute hospitals are commonly structured by individual professions. The needs of the multiply injured patients are such that an acute multi disciplinary rehabilitation team (MDRT) will need to be established within all MTCs. The establishment of such teams will require a level of service reconfiguration. Teams will need to be wholly structured as multi-disciplinary team units, as opposed to teams based around individual professions. Evidence suggests that such teams do not typically exist throughout the trauma pathway, in particular in the acute phase.

The value of co-ordinator roles is becoming increasing recognised following successes in areas such as stroke. Co-ordinator roles are currently uncommon, especially in acute hospitals. The impact of implementing lead clinician and network co-ordination roles should be monitored. These roles may be filled by therapists and could affect the level of resources available for direct clinical care.

Specialist rehabilitation services (which may be accessed following acute hospital care) have historically been established to meet the needs of specific patient groups, for example brain injury. These services regularly have waiting lists to access and the establishment of RTNs may result in higher levels of demand through improving survival rates.

Community or outpatient rehabilitation services may be accessed directly after acute hospital care or following specialist rehabilitation. The key workforce issues in this pathway phase are resource levels and vocational rehabilitation expertise. These services often only have the capacity to facilitate short, low intensity input therefore the ability to meet the long term needs of trauma patients is often restricted. The need for greater vocational rehabilitation is a significant issue, with very few services offer this specialist input.

Therapy staff often lack specific training in acute rehabilitation. There may be a required increase in the therapy workforce as a whole in community settings. Currently, generic services only have the capacity to facilitate short, low intensity levels of intervention. As such the ability to meet the longer term needs of trauma patients needs is restricted.

4.1.2 Occupational therapists

The capacity for occupational therapy (OT) involvement in early rehabilitation is often very limited. The need may be greatest in acute settings, where current staffing levels primarily support assessment and discharge planning rather than input into detailed rehabilitation. The number of staff with the necessary level of expertise to provide vocational rehabilitation services in acute settings is currently very small. Overall, there is a healthy current and predicted future supply of occupational therapists in the NHS (see Figure 3).
According to the Information Centre Census, there were 15,003 full time equivalent qualified occupational therapy staff (17,698 headcount) employed in the NHS as of September 2009. Figure 3 above shows the historical and forecast supply of occupational therapists. Supply modelling forecasts stable growth in the occupational therapy workforce supply, rising to 16,765 FTE by 2015. The slight reduction in qualification rates in 2009 and 2010 may have an effect on sustaining the RTN workforce in the medium term, with a reduction in the size of the pool from which rotational posts are filled.

4.1.3 Physiotherapists

Nationally, there is evidence of difficulties recruiting to senior NHS physiotherapy posts. There are indications that there are a limited number of senior staff with expertise in polytrauma, complex musculoskeletal and amputee rehabilitation. Physiotherapists are also required to provide respiratory on call services in TUs and MTCs. Although this may not be a new requirement for trusts, some services may need expanding. Commissioning levels were cut in recent years in response to high levels of graduate unemployment, resulting in a slowing future supply of physiotherapists (see Figure 4).
The NHS Information Centre census recorded 18,460 FTE qualified physiotherapy staff (21,984 headcount) in the NHS as of September 2009. Based on current CfWi modelling, if commissioning levels are maintained the supply of physiotherapists in the NHS is forecast to plateau, increasingly slightly over the next five years, and then decreasing marginally from 2015. The lack of information on levels of trauma activity makes workforce predictions challenging. Qualification rates appear adequate, but the number of physiotherapists who will be available to support trauma services is unclear.

4.1.4 Speech and language therapists

Speech and language therapy services offered to major trauma patients are assessment focused, with limited capacity for services such as rehabilitative care, treatment intervention and specialist trauma-related support for families. This issue is exacerbated by the fact that there have been difficulties recruiting to specialist roles. Greater levels of investment may be necessary to address longer-term patient issues such as social and vocational reintegration. However, overall supply figures for the speech and language therapy workforce appear healthy, with strong projected future growth if current commissioning levels are maintained (see Figure 5).
The 2010 NHS Information Centre Census recorded 5,968 FTE (7,486 headcount) qualified speech and language therapy staff in the NHS as of September 2009. If current commissioning levels are maintained, existing CfWI modelling forecasts indicate that the speech and language therapy workforce will steadily increase, rising to 6,698 FTE (8,401 headcount) by 2015. It should be noted that speech and language therapy workforce data collection does not reflect the large proportion of speech and language therapists working with children and families to overcome speech, language and communication deficit, and thus not available to work in adult services or with major trauma.

4.1.5 Prosthetists and orthotists

Very little workforce data is currently available on the prosthetists and orthotists workforce within the NHS. This is a result of the majority of prosthetists and orthotists being contracted in to the NHS rather than being directly employed. As of December 2010 there were 895 prosthetists and orthotists on the UK Health Professional Council (HPC) register.

Prosthetists and orthotists provide reconstructive care and rehabilitation to trauma patients. Amputation has a massive physical and psychological impact on a patient so it is essential that definitive planned surgery is performed in consultation with rehabilitation and prosthetic services in order to maximise patient rehabilitation potential. Furthermore, the CAG suggests that all MTCs should ensure prosthetics services have the capacity to provide a timely pre-
surgical opinion regarding the level of amputation. This has the potential to increase the number of consultations necessary from prosthetic services, placing additional demand on the workforce.

Prosthetist and orthotist training is currently provided at two universities within the UK, the University of Salford, and the University of Strathclyde. This leads to substantial disparities in the supply of newly qualified staff across the NHS, with England reliant on recruits trained in Scotland to meet its service demand.

Within the existing workforce around 70% of orthotists are employed by companies contracted to the NHS and around 30% are employed directly. Contracts between NHS trusts and prosthetic and orthotic service providers do not provide for the service provision needs of new graduates and trusts will not typically pay additional sums to contractors to provide graduate support. As a consequence, many employers tend to recruit experienced staff to the detriment of newly qualified staff, which leads to the loss of new graduates and their skills to other professions. In addition, the British Association of Prosthetists and Orthotists (BAPO) reports that a lack of career development opportunities for experienced staff is resulting in attrition from the profession.

4.1.6 Psychological services

Psychosocial and mental health services are vital major trauma services and should run in parallel with patients’ physical healthcare from first response until after discharge from hospital care. A number of activities resulting from this model of care may increase the demand on the psychology workforce. Psychologists are also central to rehabilitation services. Following major trauma rehabilitation, patients’ physical and psychosocial needs should be addressed to restore maximum levels of function.

According to the latest Information Centre census (2010) there were 6,706 (full time equivalent) qualified clinical psychology staff in the NHS as at September 2009. It is likely that there is inaccuracy of the returns and that ‘clinical psychology’ includes all types of applied psychologists, some psychology assistants and trainees, counsellors and some psychotherapists. There are a number of supply risks within the applied psychology workforce, particularly regarding trainees. Placement capacity for clinical psychologists can act as a potential barrier to the continued expansion of the workforce, though British Psychological Society changes over recent years have increased the flexibility of placements and the number of supervisors available.

4.2 Scale

- The issues affecting therapists within RTNs are network-wide. Successful implementation of RTNs requires acute rehabilitation of major trauma
patients from an early stage, with indications suggesting that this will be a new way of working for many therapists.

- The rehabilitation pathway for major trauma patients is currently unclearly defined. There is little knowledge of major trauma patients’ actual rehabilitation needs. As such, the scale of the issue is currently difficult to properly assess but it is anticipated to be significant. Data on patient volumes, dependency, therapy requirements and outcomes is not routinely collected or analysed. However, the impact of RTN on therapists is likely to extend across the whole pathway.

- Quantifying the impact of RTN on existing community services may also be especially challenging as services are not usually diagnosis specific but are based on patient need.

4.3 Potential solutions

4.3.1 Overarching

- Detailed exploration of existing therapy resources and services from acute care to community and out-patient services would allow the specific therapy workforce issues in a network to be clarified and ensure targeted development of services. Achieving enhanced capacity and flexibility of existing services will require patient pathway mapping and joint working between commissioners and clinicians.

- Investment in training will be fundamental to the success of RTNs. Many of the identified issues may largely require additional training for existing staff and an element of service reconfiguration. For example within MTCs new roles such as network rehabilitation coordinators and, to a lesser extent, care and rehabilitation coordinators, will generate a need for additional training in order to up-skill existing staff to take on these roles. A proportion of clinical posts are likely to be rotational and therefore regular training opportunities will be required.

- Existing models for rehabilitation and care coordinator roles such as those within stroke services could be reviewed. The numbers of therapy staff with sufficient clinical experience to perform effectively in these roles may be limited and it may also be necessary to consider shared roles with other specialties.

- The establishment of MDRTs within all MTCs and rehabilitation teams within TUs will necessitate reconfiguring rehabilitation services, which are often currently organised around individual professional groups. This is likely to require short term data collection to identify deficits and
highlight investment priorities. Over time these new structures will allow higher quality data to be collected and genuine activity levels for trauma to be collected. In the interim, although developed for specialist rehabilitation services, the British Society for Rehabilitation Medicine rehabilitation standards may be a useful tool to assist planning and implementation.

• Vocational rehabilitation services are traditionally provided by occupational therapists and specialists in occupational medicine. However, for the effectiveness of vocational rehabilitation to be maximised, its principles must be included in the training programme of every therapist working in the rehabilitation of trauma patients. Planning improvements will require local assessment of existing resources, collating evidence to support change (patient level data and network predicted trauma activity in the working age group) and careful service planning with commissioner input. Sharing of services across other patient groups may also be vital to efficiency. In the short-term, the identification of network staff at all point along the pathway that may be trained to supplement the service may be of value.

• Evidence from the London Trauma Office suggests that within undergraduate training there is little curriculum content relating to trauma and poly trauma. Increasing the level of trauma-related content in therapist degree courses would be valuable.

4.3.2 Occupational therapy

• Capacity issues may be partially resolved through the delegation of specific tasks within MDTs.

• Anecdotal evidence suggest there is a specific need for more highly skilled vocational rehabilitation OTs in order to deliver vocational rehabilitation services directly and train other therapists from other disciplines. The availability of specialist vocational rehabilitation OTs should also be investigated locally.

4.3.3 Physiotherapy

• Physiotherapists with experience in major trauma should be identified locally and encouraged to share their expertise with other physiotherapists.

• In order to ensure 24 hour access to respiratory physiotherapy services, physiotherapy workforce levels will need to be assessed locally.
4.3.4  Speech and language therapy

- In order to ensure adequate speech and language therapist capacity within MTCs, capacity should be locally assessed, and training opportunities developed in order to up-skill staff for specialist roles. This is a strategy supported by the Royal College of Speech and Language therapists (RCSLT) which states that due to the current economic climate there has been a reduction in the number of advertised vacancies for senior speech and language roles. The college proposes that lower level staff should be developed in preparation for senior vacancies becoming available in the future.

4.3.5  Prosthetists and orthotists

- Technicians and assistants are able to support the clinical work of prosthetists and orthotists. Skills for Health has produced National Occupation Standards (NOS) for rehabilitation technicians, in order to make the design of formalised training packages possible. Occupational therapists, physiotherapists and podiatrists may also be able to take on activities traditionally preformed by prosthetists and orthotists.

- Evidence from the service suggests that there is a lack of awareness of the profession as a career choice. Increased marketing efforts could attract more candidates to training programmes.

4.3.6  Psychological services

- The availability of psychologists to resource acute trauma rehabilitation teams in MTCs and TUs should be investigated locally. The resources required to deliver the proposed activities of the stepped programme of psychosocial and mental health care outlined in the CAG report should be considered locally. Skills mix should be carefully considered as a number of activities could be delivered by a range of psychosocial and mental health practitioners.

4.4  Timescale

Investigation and appropriate planning for therapy services improvements should take place as priority. Many of the immediate workforce issues faced by therapists can be ameliorated through additional training and service reorganisation. To an extent, the shortage of senior therapists with experience in major trauma care and complex management can be mitigated by providing access to training opportunities and Continued Professional Development (CPD)
to existing staff. However, there may be some areas where increased resourcing could be required, such as within the community setting. The precise rehabilitation services required within a MTC and a TU will be different, as indeed will the rehabilitation services required in other settings within each RTN. The resulting workforce implications will only become clear as these requirements are fully defined and planned.

The establishment of MDRTs, in conjunction with new rehabilitation coordination roles and vocational rehabilitation training for all therapist staff, should ideally be implemented within the first year of operation of RTNs.

4.5 Data limitations

Data for therapy staff has been taken from the most recent NHS Information Centre census, which provides staffing numbers as of September 2009. This data is fully verified and relatively reliable. However, it provides no indication as to their areas of expertise the amount of time therapy staff spend working on major trauma or their place in the pathway. This means the data is of limited use in planning and evaluating rehabilitation capacity within RTNs.

4.6 Expert Comment

"At present there is limited evidence about existing services, how these are arranged and their levels of capacity. It is anticipated however that regional trauma networks will increase resource demands in each of these professional groups and across the pathway. Prompt review of MTC, TU and network resources will be necessary to identify the most significant workforce issues. The impact may vary between regions and each profession at points in the pathway. Involvement of senior clinicians in this review process is strongly recommended as is the promotion of ongoing data collection and outcome measurement to monitor services and patient need.

Co-ordinator roles will be new in many areas. These roles will promote improved communication and transition between rehabilitation providers and most importantly protect clinician’s time for rehabilitation intervention. The development of MD rehabilitation teams in the acute setting is strongly advocated and evidence supports early rehabilitation intervention. Overall, regional trauma networks may well be a catalyst to achieving greater compliance with advice within the long term conditions NSF and the 2009 NICE guidance on rehabilitation following critical illness and produce benefits to wider patient populations."
Currently many professionals rely on limited local expertise and professional special interest groups for trauma education. There is a need to commission the development of a range of accredited and multi-professional opportunities including to an MSc level to enhance access and efficiency and promote trauma as an independent specialty.”

Rebekah Middleton, Clinical Specialist Physiotherapist – Neurosciences, Senior Project Officer, London Trauma Office
5 ESSENTIAL NURSING SERVICES

5.1 Risk

Nurses are the largest overall staffing group in the NHS, with 322,425 FTE (395,229 headcount) staff recorded as working in the NHS as of September 2009 (NHS Information Centre, 2010). Only high-level data is available for the nursing workforce. No acceptably validated data source provides workforce information at a granular level. RTNs are likely to require specific groups of specialist nursing teams including critical care nurses, peri-operative nurses, imaging nurses, emergency nurses, trauma ward nurses and rehabilitation nurses. As such, headline figures covering all nursing staff are of limited use in analysing the workforce risks around RTNs. Each area of nursing has specialist skills and nursing roles are not immediately interchangeable between areas/specialities without experience, education and training. In addition to the numbers of nurses required there should be equal focus on the skill mix and competence of the nurses within the specialist areas.

MTCs require dedicated, separate operating theatres for both emergency and secondary trauma and reconstructive surgery, available and appropriately staffed 24/7, in order to avoid disrupting other urgent elective procedures. This will lead to increased demand for theatre nurses. Many NHS organisations have reported recent difficulties recruiting specialist theatre nurses (NHS Workforce Review Team, 2010). Theatre nurses are on the latest Shortage Occupation List, allowing expedited international recruitment.

In MTCs, patients with multiple injuries should be treated in dedicated nursing wards with their own specialist nursing teams. Traditionally with the exception of some critical care areas, nurses are focussed on specific surgical specialties rather than having the broad knowledge and skills base required to deliver comprehensive major trauma care. Nurses working on dedicated trauma wards will face a wider case mix with an increased severity and acuity. Further work is required to scope the numbers and skill mix needed for nurses working in trauma rehabilitation.

Nursing capacity may also be required for inter-hospital transfers, potentially further increasing demand for their services.

5.2 Scale

- Nursing resourcing issues will be focussed at MTCs, due to the increased number of major trauma cases presenting and the new proposed service requirements.
• However, resourcing pressures from inter-hospital transfer duties are likely to have some impact at TUs, as it is generally the referring unit’s responsibility to transport patients.

• Although much of the increased workload will focus on the MTCs, TUs will still receive patients with significant trauma who will require resuscitation and stabilisation before onward transfer. There is a risk of deskilling of staff in such units. Senior nursing leadership will be essential in supporting these units.

5.3 Potential solutions

• Specialist training programmes will be required for all relevant nursing areas. Training for theatre nurses should ensure that they are equipped to deal with the higher acuity and severity of major trauma patients. For nurses working on dedicated trauma wards, training should provide them with the wider skill set necessary to provide dedicated care for polytrauma patients, commonly including general surgery, thoracic injury, spinal injury, orthopaedic and plastic surgery. The development of major trauma networks may involve the development of new roles for nurses. These might include nurses working as part of an Enhanced Care Team involved in the primary response to trauma or transfer between TUs and MTCs. This will require specific role preparation, education and training. There is a need for a nationally recognised competency framework and standardised approach to training for nurses in trauma management.

• Rotational posts could be developed at junior staffing levels, offering nurses experience in emergency departments, theatres, critical care areas and trauma wards.

• Employers should focus on increasing the attractiveness of specialising in theatre care or rehabilitation nursing as career options for trainee nurses within the NHS.

• RTNs will need to ensure they have sufficient levels of staff available to perform inter-hospital and bypass transfers. A large range of staff have the potential to be involved in providing secondary inter-hospital transfers, including paramedics, ambulance technicians, emergency nurses, anaesthetists, emergency care assistants, intensive care unit nurses, operating department practitioners, paramedic practitioners, paramedics and pre-hospital specialists.
5.4 Timescale

Depending on local nursing resources and expertise, relevant trauma training should be organised as soon as possible. Increasing overall numbers of theatre nurses available to the NHS will be a longer-term project.

5.5 Data limitations

No acceptably validated data source provides workforce information at a granular level for nursing staff. Individual organisations will hold more accurate information regarding the skills of their nursing workforce but this data is not available on an aggregate level. This means that, nationally, workforce data can only be analysed at a very high-level: the Information Centre does not record nurses by area of work, and data from the Electronic Staff Record (ESR) varies in quality.

5.6 Expert comment

“Emergency nurses have a key role in the initial management and stabilisation of patients with major trauma. There is a lack of clarity around skill mix in emergency nursing with considerable variation across the country on numbers and experience of nurses working in emergency care. Urgent work is required to identify the optimal skill mix and education required to meet the major trauma agenda. The development or adoption of a nationally agreed competency framework for the management of major trauma is urgently required.

Formalising the response to major trauma in terms of unit and major trauma centres designation is an important step. It is essential that there is equal focus and priority given to education and training of the nursing teams across these units. Collaboration between emergency nursing teams across the network will be important in developing skills and exposure to major trauma. All emergency nurses in TUs and MTCs should receive a minimum of a one day introductory course on managing trauma within the first year of working in the ED. Nurses expected to take a leadership role (usually Band 6 and above) should attend a formal trauma course (such as ATNC, TNCC, ETC, PHEC), or in house equivalent, within the first 2 years of appointment. Regular team simulated trauma moulages based on previous cases should be part of the ongoing education programme.

Formal role preparation for nursing leadership in the trauma room should emphasise the importance of ‘human factors’ and how they influence effective care. The development of trauma networks may
invoke new roles for nurses possibly as part of an Enhanced Care Team, involving primary response to trauma and/or secondary transfer. Formal preparation and assessment of competence for these roles will be essential.”

Professor Rob Crouch, Consultant Nurse, Emergency Department, Southampton University Hospitals NHS Trust
6 NETWORK COORDINATION ROLES

6.1 Risk
In order for RTNs to function efficiently, a range of network coordination roles are necessary. These positions will have to be filled using existing, senior level clinical staff, potentially reducing capacity to staff other critical areas of the network. For example, a consultant-level doctor with extensive pre-hospital experience of the management of major trauma should be available 24/7 to provide medical advice to the pre-hospital team and ensure each individual patient receives the appropriate care. This doctor must be free from all other competing responsibilities while providing this service to the RTN.

6.2 Scale
• This is a network-wide issue.

6.3 Potential solutions
• Many of the network coordination roles may be filled via job share arrangements and shared rotas, meaning that appointees will still be able to contribute to frontline services as necessary.

6.4 Timescale
Should be possible to appoint staff to the posts as soon as required; the risk primarily relates to impact on the capacity of other services, which will need to be assessed locally.

6.5 Data limitations
As these roles are new, no staffing data is currently available.
7 AMBULANCE STAFF

7.1 Risk

The establishment of RTNs will increase both the length and number of primary and inter-hospital transfers that need paramedic support. For some primary transfers, paramedics will be required to bypass TUs to deliver patients directly to a MTC. This will lengthen the distance and therefore time it takes to complete a primary transfer and become available back in their base area. The number of inter-hospital transfers between TUs and MTCs following initial stabilisation may also increase in geographically spread networks. The number of transfers may decrease in more exclusive network configurations in major conurbations.

There is also a need to further improve and maintain the skill set of paramedics to access and manage major trauma at the scene of the incident. In particular the decision-making of emergency responders needs more consistency and clarity.

According to the September 2009 Information Centre census, there were approximately 17,214 FTE (17,922 headcount) qualified ambulance staff in England. As can be seen in Table 1, a high proportion of the current ambulance workforce (35%) are ambulance technicians.

Table 1 – Qualified Ambulance Staff in England, September 2009

<table>
<thead>
<tr>
<th>Role</th>
<th>FTE</th>
<th>Headcount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager</td>
<td>684</td>
<td>692</td>
</tr>
<tr>
<td>Emergency care practitioner</td>
<td>728</td>
<td>750</td>
</tr>
<tr>
<td>Ambulance paramedic</td>
<td>9,755</td>
<td>10,089</td>
</tr>
<tr>
<td>Ambulance technician</td>
<td>6,048</td>
<td>6,391</td>
</tr>
<tr>
<td>Total</td>
<td>17,214</td>
<td>17,922</td>
</tr>
</tbody>
</table>

*FTE figures do not sum to 17,214. This is due to rounding errors
Weaknesses have been identified with this data regarding ambulance staff. This is due to the use of a range of definitions within roles (see below for further details).

7.2 Scale

- The demand generated from extended transfers to deliver the patient to the nearest MTC or require an inter-hospital transfer following stabilisation will be a network-wide issue. The incidence of such cases,
however, will be relatively small and dependent on network configurations.

- Any resourcing issues resulting from increased transfer activity will be felt more greatly in some regions as a result of the variation in the proportion of the frontline staff that are qualified paramedics rather than ambulance technicians or other non-registered clinical staff. Others relevant variables include population demographics, local geography and road infrastructure.

### 7.3 Potential solutions

- Responsibility should be formally assigned for transfers and systems should be established to ensure transfers are performed efficiently and effectively.

- RTNs will need to ensure they have sufficient levels of staff available to perform inter-hospital and bypass transfers. Careful consideration should be given to the skills required for inter-hospital transfers. For instance, if an anaesthetist is accompanying a patient, it may be that a qualified nurse or even assistant practitioner could participate in the patient transfer in place of a paramedic, thereby drawing staff from a wider pool of resource.

- Appropriately staffed enhanced care teams of NHS Career Framework level 6 to 8 practitioners should be able to provide effective on-scene care, although the precise workforce requirements for such teams are yet to be determined.

- In some areas of the country there is currently some provision of advanced on-scene care by doctors, reducing the time to certain meaningful interventions. This is usually arranged on a voluntary basis, without agreed national accreditation or funding. A sub-specialty development programme is currently underway for pre-hospital emergency medicine. It is anticipated that any resulting specialist doctors in pre-hospital emergency medicine will contribute to enhanced care.

- Ensuring the correct pre-hospital response involves accurate assessment and recognition of major trauma cases. This can be improved by having paramedics working in despatch teams. Only London Ambulance Service currently has 24 hour paramedic coverage in London Ambulance Service (LAS) despatch centre, but there is the potential for other services to operate a similar model.
7.4 **Timescale**

All the above issues are operational issues and paramedic workforce levels will need assessing locally prior to establishing RTNs. While it is likely that additional demands will be met through careful use of rotas and skills mix adjustments, consideration may need to be given to workforce numbers and location within regions.

7.5 **Data limitations**

Data has been taken from the NHS Information Centre census. Weaknesses have been identified with this data regarding ambulance staff. This is due to the use of a range of definitions within roles. For example the manager category contains some clerical and non-clinical staff. Furthermore, multiple terms have been used in respect of paramedics, who in some cases have been termed 'emergency care practitioners.' The College of Paramedics is currently in discussions with the Information Centre and the Health Professions Council (HPC), who regulate Allied Health Professionals and therefore require that paramedics are identified by their protected title 'paramedic,' not by alternative confusing designations, about these issues.

7.6 **Expert comment**

"As registered first-contact practitioners, paramedics will usually attend major trauma incidents as first on scene via the 999 system. In order to continue to provide optimal care for serious trauma patients, it will be necessary to further increase paramedic numbers not only at registration level but also at NHS Career Framework levels 6 and 7 (specialist and advanced paramedics) in particular. Roles such as the Critical Care Paramedics are already well established in some regions and provide quality and cost effective care for trauma patients.

Recent research (Jashapara, 2011) provides robust evidence to support the efficacy of specialist paramedic roles within the range of provision for the pre-hospital trauma workload, from paramedic to high-level medical support."

Jim Petter, Director of Professional Standards, College of Paramedics; Senior Lecturer in Paramedic Science, University of West England
8

EMERGENCY MEDICINE

8.1 Risk

The majority of trauma team leader positions are likely to be filled by doctors in emergency medicine, although other specialities are relevant. MTCs require a consultant-led trauma team, with the consultant team leader immediately available on site 24/7. In TUs, trauma teams must be led by a registrar at ST4 or above, with a consultant available to be on site within 30 minutes. There is currently a national shortage within emergency medicine of consultants, middle grade doctors and trainees with sufficient skills to provide trauma team leadership in the short to medium term, and other solutions will need to be found.

Historically, emergency medicine services have been delivered using a relatively junior workforce, with a high ratio of junior and middle grade doctors to consultants. This is illustrated in Figure 6, which shows the emergency medicine workforce mapped to NHS career framework grade. The NHS career framework consists of nine different levels at which a function could be performed, from initial entry level jobs at level 1 to senior, specialist staff at level 9. There are currently more emergency medicine staff at levels 7 and 8 of the career framework than there are at level 9 (consultant level), an unusual skills mix profile for a medical specialty. It is worth noting that the graph does not include doctors on the general practice vocational training scheme (GPVTS) or medical and surgical trainees on rotation to emergency medicine, so the workforce below career framework 9 is likely to be larger than indicated.

A compounding contemporary issue is that most EM consultant rotas focus towards weekday and daylight shifts inconsistent with the peak presentation of major trauma cases. Populating rotas that allow both 24/7 resident consultant cover in the MTC and 30 minute consultant on site availability to TUs may be a particular pressure point.
According to the September 2009 Information Centre census there are 906 full time equivalent (938 headcount) consultants in England. Figure 7, below, shows the geographical distribution of consultants in emergency medicine in terms of numbers of FTE staff per 100,000. Numbers range from 1.2 FTE consultants per 100,000 population in East Midlands SHA to 2.7 consultants per 100,000 in North East SHA. This data is indicative and does not consider population characteristics. For example, the population in North East SHA is more dispersed than the population in East Midlands SHA, so more consultants may be required to deliver a similar level of service.

Emergency medicine has the highest recorded three month vacancy rate of any medical speciality (NHS Information Centre 2010). Three month vacancies are vacancies which have been open and actively recruited to for three months or more. Emergency medicine has a 3.3% mean three month vacancy rate, compared to 1.4% for all other doctors in England. This figure varies widely regionally, with North East SHA recording a 0% three month vacancy rate, but Yorkshire and the Humber SHA (5.9%), West Midlands SHA (5.6%), South Central SHA (5.5%) and East Midlands SHA (5.3%) recording vacancy rates higher than the national average.
8.2 Scale

- If an emergency medicine-led model of service delivery is used in both a network’s MTC and its TUs, demand for emergency medicine staff will be particularly high.

- The level of issue encountered will depend on the number of TUs in the network and the number of consultant-level doctors in emergency medicine available in the region: it may be difficult for regions with relatively low numbers of consultants in emergency medicine to staff large numbers of TUs.

- Populating rotas that allow both 24/7 resident consultant cover in the MTC and 30 minute consultant on site availability to TUs may be a particular pressure point.

8.3 Potential solutions

- MTCs could potentially cover weekend and night shifts to achieve 24/7 resident consultant-level presence, by using emergency consultants whose usual employment is within one of the network’s TUs or other hospitals. The impact of this approach will depend on the number of TUs in each RTN; the shape of each network may partly depend on its existing level of emergency department staffing. This option has the advantage of promoting cohesive relationships within the RTNs and maintains skills for those non-MTC emergency medicine consultants wishing to maintain...
high level major trauma resuscitation skills. It depends on consultants adopting new ways of working and appropriate recharge arrangements being agreed between trusts.

- Staff may be encouraged to work extra shifts through incentivisation. This is likely to involve overtime payments in the short-term and contract renegotiation in the long-term.

- There is scope for the team leader position to be filled by consultants in critical care, general surgery or orthopaedic surgery. This is a recognised model practised internationally. Co-ordination within the resuscitation team environment is critical and requires all contributing consultants to align fully with processes and protocols. Emergency physicians have an advantage in being free from the responsibility of continuing care into theatre or ICU and can therefore adopt the trauma team leader role as part of a normal shift whereas most other specialties would require dedicated time. Emergency physicians are able to contribute to patient care for all other emergency patient groups when not actively managing a trauma patient giving additional value for money.

- Career progression and structure need to be carefully considered to enable rotas to be fully staffed. The College of Emergency Medicine recommends the expansion of consultant numbers, in part, to reduce the participation in overnight work in the later years of a consultant's career. (CEM, Emergency Medicine Consultant workforce recommendations April 2010).

- International recruitment may be used to appoint doctors to vacancies, particularly at middle grades. However, there are a number of barriers to international recruitment, including registration, visa administration and finding suitable candidates. In the longer-term, emergency medicine must be made more attractive as a specialty.

### 8.4 Timescale

In the short-term, 24/7 consultant rotas could be achieved through incentivisation and shared rotas with other specialties. Where feasible and relevant, emergency medicine staff may have to be redistributed to different hospitals within the RTN. Longer-term sustainability will depend on sufficient numbers of Certificate of Completion of Training (CCT) holders being available. The number of CCT holders in emergency medicine is forecast to increase to 1,575 FTE by 2018 (1,853 headcount), an average increase of 7.2% annually (see Figure 8).
However, supply is projected to fall short of the College of Emergency Medicine’s (CEM) recommendations for a minimum of 10 consultants in emergency medicine per emergency department to provide 8am to midnight cover seven days a week (CEM, 2010). This would equate to a workforce of 2,222 FTE consultants in emergency medicine for England. If there is widespread adoption of this CEM recommendation, there will be competition between MTCs, TUs and other emergency departments for a relatively limited supply of emergency medicine consultants unless there is expansion of current emergency medicine training programs.

**Figure 8 – Historical and future supply of doctors in emergency medicine**

![Cumulative historical workforce supply (FTE) and future consultant projections - Emergency Medicine](chart)

*Sources – NHS Information Centre census 1997-2010, Deanery Monitoring 2008, CfWI modelling*

### 8.5 Data limitations

Data has been taken from the most recent NHS Information Centre census, which provides staffing numbers as of September 2009. Although the data is now somewhat out of date, it is fully verified and is the least controversial centrally-held workforce data currently available.

### 8.6 Expert comment

“The College of Emergency Medicine would recommend emergency medicine consultants as the preferred option for 24/7 trauma team leadership. Consultants in emergency medicine already provide clinical presence and input until midnight where there are sufficient numbers to allow sustainable rotas.
Overall, however, many emergency departments remain understaffed at consultant level and there is an urgent need for increased numbers from the current 906 to 2222 to staff current emergency departments in England adequately. The clinical and cost benefits of increased emergency medicine input are supported by a robust body of evidence. Urgent workforce planning is required to ensure the trainee numbers are in place to provide fully trained emergency medicine consultants as soon as possible. The current projected timescale is unacceptably prolonged.

During the next three years, there will be a surge in emergency medicine trainees completing their CCT. Emergency medicine trainees have expressed support for the principle of 24/7 working, where there are sufficient consultant numbers and job plans reflecting the demanding nature of such work. Current indications are that 24/7 EM consultant presence requires approximately 22 consultants to allow sustainable rotas which will attract and retain consultants. Appointing emergency medicine consultants will allow their pluripotential role to enhance care for other patients, in addition to the major trauma group.”

Dr. John Heyworth, President, College of Emergency Medicine
9  CLINICAL RADIOLOGY

9.1  Risk

The establishment of RTNs will create additional demand for consultant scanning availability in both MTCs and TUs. MTCs will need 24/7 immediate availability of a full range of imaging services – CT, MRI, ultrasound, interventional radiology and angiography. TUs will need 24/7 availability of CT scanning. Increased demand will result not only from an increase in the absolute number of scans, but also a reduced timeframe in which to acquire and report them.

According to the 2010 Information Centre census, there were 2,354 (2,235 full time equivalent) clinical radiology consultants employed in the NHS as of September 2009. Figure 9 shows the consultant workforce has expanded by 28% since 2004 and the supply of clinical radiology consultants over the next 10 years is forecast to increase to 2,438 FTE by 2018 (2,622 headcount), an average increase of 1.5% annually. However it should be noted that though the workforce is forecast to increase at a steady rate, this does not meet the Royal College’s estimated requirement of 3,000 FTE consultants in clinical radiology.

*Figure 9 – Historical and future supply of doctors in Clinical Radiology*

![Graph showing cumulative historical workforce supply (FTE) and future consultant projections - Clinical Radiology](image)

*Sources – NHS Information Centre Census 1997-2010, Deanery Monitoring, CfWI modelling*

Figure 10, below, shows the geographical distribution of clinical radiology consultants by SHA, and indicates that there is a level of variation in the
distribution of consultant, with numbers ranging from 3.3 FTE consultants per 100,000 in the South East Coast SHA to 5.8 FTE consultants per 100,000 in London.

**Figure 10—Clinical Radiology Consultants (full time equivalent) by SHA per 100,000 population**

<table>
<thead>
<tr>
<th>SHA</th>
<th>FTE Consultants per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>South East Coast</td>
<td>3.3</td>
</tr>
<tr>
<td>East Midlands</td>
<td>4.2</td>
</tr>
<tr>
<td>East of England</td>
<td>4.4</td>
</tr>
<tr>
<td>West Midlands</td>
<td>4.7</td>
</tr>
<tr>
<td>South Central</td>
<td>5.0</td>
</tr>
<tr>
<td>Yorkshire and The Humber</td>
<td>5.2</td>
</tr>
<tr>
<td>North East</td>
<td>5.4</td>
</tr>
<tr>
<td>South West</td>
<td>5.6</td>
</tr>
<tr>
<td>North West</td>
<td>5.8</td>
</tr>
<tr>
<td>London</td>
<td>6.0</td>
</tr>
</tbody>
</table>


### 9.2 Scale

- It is likely that this issue will have a more significant impact at TUs, particularly as a result of the increased demand to perform and report scans more quickly.

- While this will be an issue for all RTNs, the extent to which it will impact on RTN regions will be dependent on how well a region’s hospitals are equipped and resourced. Geography and infrastructure will also determine the extent to which the imaging workload is shifted from TUs to MTCs. Most notably, in regions with extended transfer times to the MTC, the TUs are likely to need greater scanning capability. This will have to be locally investigated and planned.

### 9.3 Potential solutions

- Current technology enables radiologists to view and report images remotely, enabling regional on-call rotas. These have significant potential as a solution for reporting and improving the quality of major trauma scan interpretation.
• The development of achievable and attractive rotas should be considered in order to ensure scanning resource is consistently in place. Within RTNs, work could be concentrated into emergency and elective streams to reduce interruption in activity.

9.4 Timescale

24/7 consultant scanning or reporting availability should be achievable in the short-term through the use of rotas and the use of new and advancing technologies. The provision of 24/7 consultant scanning in the longer term will be dependent on sufficient numbers of consultants being available.

9.5 Data limitations

Workforce data has been taken from the NHS Information Centre census. While this is centrally-held and fully verified, it contains no information about individual radiologists’ areas of expertise, or their level of involvement in major trauma care.
10 INTERVENTIONAL RADIOLOGY

10.1 Risk

Many major traumas involve haemorrhage and the aspiration must be that an interventional radiologist is available to attend at each MTC within 60 minutes, 24/7. However, interventional radiology is a relatively small sub-specialty, achieving sub-specialty status as recently as April 2010, and access to services varies substantially across the country.

Very little workforce data is currently available for interventional radiology. A survey by the Royal College of Radiologists in 2007 found that just 14 hospital trusts across the UK could provide 24/7 availability of interventional radiology to stop bleeding, drain abscesses and other collections or to open up blocked arteries. More recent information from the Royal College reports that in 2010 there were 60 trained and experienced interventional radiologists providing a 24/7 service across the UK. A recent survey of proposed MTCs carried out by the Royal College found that the majority (12 out of 20) are likely to have resourcing issues delivering the required level of interventional radiology services. There are also indications of staffing shortages in interventional radiology nursing.

Interventional radiologists apply their skills to a range of clinical scenarios, and trauma may be particularly challenging. It needs to be investigated whether any training is necessary in order for the existing interventional radiology workforce to resource the trauma pathway.

10.2 Scale

- This is an MTC level issue. Its impact will be contingent on the level of interventional radiology capacity within each region.

10.3 Potential solutions

- In order to meet the CAG requirement, the workforce levels of interventional radiologists will need to be established locally. It is likely that workforce numbers will need to increase in some areas.

- On-call rotas for interventional radiologists should be established. The requirement for interventional radiology services is likely to be intermittent and this approach will ensure that the workforce is not underutilised. In addition there may well be skills overlaps with the wider clinical radiology workforce which can help meet RTN requirements.
• The interventional radiology requirements of vascular networks and RTNs could be assimilated into single sites.

• Training opportunities may also need to be made available to existing interventional radiologists, in order to ensure they are equipped with appropriate skills to deliver trauma care.

10.4 Timescale

This issue is likely to take time to solve. RTN regions will need to assess what interventional radiology workforce levels are required to meet local demand and the training and development that is necessary to ensure interventional radiologists can deliver trauma care within MTCs. Though the requirement for interventional radiology services is likely to be infrequent, it is likely that workforce numbers will need to increase in some areas to meet the 60 minute availability requirement.

10.5 Data limitations

Most interventional radiology is carried out by clinical radiologists. No separate centrally held and verified workforce data is currently available for interventional radiologists.

10.6 Expert comment

“The workforce to support imaging for trauma patients is comprised of radiologists (both clinical radiologists and those with specific interventional radiology skills), radiographers and specialists nurses to support interventional radiology. The interventional radiology workforce is currently too small in number and for many areas of the country not currently employed in the correct institutions to support the emerging trauma networks. Trauma networks will require 24/7 on-call provision of clinical and interventional radiologists with appropriately trained radiographers and specialist nurses.

The medical workforce requires lengthy training and therefore workforce planning needs to include recognition of the need to train specialist radiologists, particularly in interventional radiology. The possible need to relocate existing radiology services to provide appropriate cover for the trauma networks needs to be highlighted in some areas of the country.”

Dr Erika Denton, Consultant Radiologist and National Clinical Director for Imaging, Department of Health
11 DIAGNOSTIC RADIOGRAPHY

11.1 Risk

The Information Centre Census reported 11,967 full time equivalent diagnostic radiographers in the NHS as at September 2009. Figure 11 presents the historical and forecast supply of diagnostic radiographers, which shows that supply has increased over the last decade, and is forecast to continue conservatively increasing in the future.

Figure 11 – Historical and anticipated diagnostic radiography supply


The delivery of effective trauma care at the acute care, ongoing care and reconstruction stages of the trauma pathway is reliant upon the availability of a range of imaging techniques, such as CT, MRI, ultrasound, interventional radiology and angioplasty. Although the interpretation of images by radiologists may often be done remotely, the taking of images by radiographers requires on site availability. Diagnostic radiography is facing increased levels of demand, with year on year growth in imaging referrals. It is recognised as a profession in undersupply and included on the Migration Advisory Committee’s (MAC) National Shortage Occupation List (NSOL). The establishment of RTNs will generate additional demand for diagnostic radiography both in terms of the provision of imaging services and a reduced time in which to produce imaging results.
A significant supply issue faced by the profession is that there is currently no national training strategy in place for diagnostic radiography, which can lead to a disparity in workforce supply across SHA regions. There is a high level of attrition from training courses, reported by the Society and College of Radiographers to range from 13%-46%.

The risks may be heightened in some regions by variations in the available supply of existing staff. Figure 12 shows the number of qualified diagnostic radiographers (full time equivalent) by SHA per 100,000 population head, which ranges from 18.1 in East Midlands SHA to 28.2 in the North West SHA.

**Figure 12 – Diagnostic radiography (FTE) by SHA per 100,000 population head**

![Diagram showing diagnostic radiography (FTE) by SHA per 100,000 population head (2009)]

*Sources: 2009 NHS Information Centre Census (2010), Office of National Statistics population data*

### 11.2 Scale

- The implications of RTNs will be greater within MTCs where 24 hour availability of imaging including CT, MRI, ultrasound, interventional radiology and angiography will be necessary. TUs will be required to establish 24 hour availability of CT scanning facilities as a minimum.
11.3 Potential solutions

- The workforce supply of diagnostic radiographers should be reviewed locally and measured against both overall demand and the additional demand that RTNs will place on the workforce.

- Training of the diagnostic radiography workforce is currently arranged via local agreement and as such needs to be carefully considered and planned by local commissioners and workforce planners, with active engagement between neighbouring regions.

- Student attrition rates should be investigated and mitigation strategies implemented where possible. Evidence from the profession suggests that major causes of the high attrition rates may be lack of support during clinical placements, financial difficulties faced by students and a perceived lack of career progression following completion.

11.4 Timescale

Diagnostic radiography is recognised as being in undersupply. Balancing demand and supply will be a long-term consideration.

11.5 Data limitations

Workforce data has been taken from the NHS Information Centre census. While this is centrally-held and fully verified, it contains no information about individual radiographers’ current level of involvement in major trauma care.

11.6 Expert comment

“Delivering effective trauma care will be reliant on the availability of a wide range of imaging services including CT, MRI, ultrasound and, interventional radiology. Diagnostic radiographers will play a key role in delivering this service. However, this is a workforce with an existing disparity between supply and demand as a result of growth in the number of imaging referrals and an increased workload resulting from a variety of policy drivers. The service has indicated that in some areas diagnostic targets are being met through the use of overtime working and agency staff, a situation which is unlikely to change without considering service redesign initiatives and skill mix solutions.”

Dr Erika Denton, Consultant Radiologist and National Clinical Director for Imaging, Department of Health
12 ANAESTHETICS

12.1 Risk

The reconfiguration of trauma services is likely to increase the demand for hospital anaesthetic activities in MTCs. MTCs require a dedicated 24/7 major trauma emergency theatre, which will need immediately available anaesthetic staff. Concurrently, concentrating major trauma within MTCs is most unlikely to reduce significantly the level of theatre activity at TUs to affect the need for anaesthetic provision out of hours.

The establishment of RTNs will, in some regions, result in an increased amount of inter-hospital transfers, facilitated by appropriately staffed and trained transfer teams. Anaesthetists may be required to participate in many transfer teams. Although some anaesthetists will have transfer experience as a formalised activity, inter-hospital emergency activity will be a new pressure. Unless the requirement is handled appropriately, there is a significant risk of the responsibility competing with other clinical work. Removal of an anaesthetist from an on call team to accompany a transferred patient may impact on other urgent and emergency care at the referring unit.

12.2 Scale

- There will be an increased requirement for anaesthetic input at MTCs resulting from higher levels of theatre activity (particularly for emergency trauma surgery and secondary orthopaedic surgery procedures).

- Transfers are likely to have a greater impact at TUs than at MTCs as it is generally the referring unit’s responsibility to transfer a patient. The issue will be more pronounced in regions where the nearest MTC is more than 45 minutes away and bypassing the TU may not be an option, necessitating a greater number of inter-hospital transfers.

12.3 Potential solutions

- Formally recognising the role of anaesthetists in patient transfers and providing comprehensive transfer training to affected staff.

- Responsibility should be formally assigned for transfers, and systems should be established to ensure transfers are performed efficiently and effectively. This may include creating rotas that consider the impact of inter-hospital transfers on other urgent and emergency procedures at referring units.
• Anaesthetists may also need enhanced trauma training. Although many anaesthetists are already used to providing patient transfer services, it is unusual for an anaesthetist to be the sole clinician caring for a critically injured patient, as they would be in such a transfer. This particular skill set has much in common with the proposed role of the specialist pre-hospital physician.

12.4 Timescale

There is a healthy overall supply of anaesthetists, with the NHS Information Centre census September 2009 recording 5,238 FTE (5,369 headcount) consultants in anaesthetics and intensive care medicine.

Figure 13 – Historical and future supply of consultants in anaesthetics

Inter-hospital patient transfers from TUs to MTCs are fundamental requirement of RTNs. There are sufficient numbers of anaesthetists to perform transfer duties, and the existing issue should be able to be addressed via the provision of transfer training and rotas that acknowledge the increased demand for anaesthetists resulting from inter-hospital transfers. However, the continued provision of anaesthetic services at the TU while anaesthetists are performing transfer duties needs to be ensured.

12.5 Data limitations

Workforce data has been taken from the NHS Information Centre census. While this is centrally-held and fully verified, it contains no information about individual
anaesthetists’ areas of expertise, or their level of involvement in major trauma care.

12.6  **Expert comment**

"The development of MTCs will increase the exposure to transfers of all types that are currently managed by anaesthetists. This includes movement within the receiving emergency unit, to CT scanning, Interventional radiology suites or operating theatres as well as to intensive care units or to distant specialist units. As these skills are embedded into current training and are taught and assessed on a regular basis they do not, of themselves, challenge the totality of anaesthetic training.

A MTC within an existing tertiary acute hospital will increase demands on anaesthesia departments especially where the impact of the EWTD has reduced the depth of cover for out-of-hours work. This increased complexity and urgency of this work will challenge the existing status quo for other areas dependent on anaesthesia provision such as surgical, obstetric, paediatric, intensive care and radiology services. Close review of this impact will be necessary.

Where a transfer occurs from a smaller emergency unit to the MTC, the loss of an on-call anaesthetist during the transfer will have an impact on the other services provided at that hospital. Again, this will require close review and will be best judged against ‘drive-by’ policies as they evolve."

Professor Chris Dodds, The James Cook University Hospital NHS Foundation Trust; Royal College of Anaesthetists
13 OPERATING DEPARTMENT PRACTITIONERS

13.1 Risk

MTCs must have dedicated, separate operating theatres for trauma and reconstructive surgery available and appropriately staffed 24/7, to avoid disrupting elective procedures and other emergency care. It is likely that MTC theatre teams will receive higher levels of trauma activity. This will place increased demand on the ODP workforce.

Many NHS organisations have recently reported difficulties filling substantive operating department practitioner (ODP) vacancies and the profession is on the latest Shortage Occupation List, allowing expedited international recruitment. Survey evidence suggests that this is partly a result of a perceived lack of opportunities for career progression within the NHS with many ODPs leaving the NHS mid-career and continuing to work through agencies for higher pay rates, improved terms and conditions and greater flexibility around working patterns.

13.2 Scale

- ODPs are a necessary component of ensuring 24/7 dedicated major theatre team availability in MTCs. ODPs will be required to handle a higher level of trauma activity using similar staffing levels to those currently in place.

- This may compound any resourcing issues encountered at TUs as a result of ensuring 24/7 emergency theatre availability.

13.3 Potential solutions

- There is a considerable level of skills overlap between the ODP workforce, qualified theatre nurses and potentially assistant practitioners, who choose to work in theatre, particularly within anaesthetic care and surgical care roles. This may also provide a level of flexibility within transfer teams as patients can be accompanied by either an ODP or a nurse with appropriate skills.
13.4 Timescale

Levels of ODPs should be locally assessed prior to the establishment of RTNs in order to determine whether MTCs are equipped to deal with trauma theatre activity levels.

There is a longer term national need for the NHS to develop more defined career pathways and benefits for ODPs to ensure an appropriate level of non-agency staff supply.

13.5 Data limitations

No granular centrally-held and verified workforce data is available for ODPs.
14 GENERAL SURGERY

14.1 Risk

RTNs require the 24/7 availability of appropriately trained and experienced consultants in general surgery, with all trauma surgery performed by a consultant surgeon with the appropriate skills and experience. There are large numbers of consultant and trainee general surgeons, with potential over-supply of CCT holders an imminent concern (see Figure 14).

Figure 14 – Historical and future supply of consultants in general surgery

However, few general surgeons currently have a special interest or specific skills in managing major trauma. The Royal College of Surgeons has also expressed concerns that the future CCT holders will have a reduced pool of trauma experience due to the impact of the European Working Time Directive and the increasing subspecialisation of surgical training.

14.2 Scale

- The impact is largely centred on MTCs. Consultant general surgeons on-call to MTCs are likely to have significantly increased trauma care responsibilities.

- As RTNs are established, general surgeons may expect to encounter a lower volume of major trauma cases in TUs and Local Emergency
Hospitals. Conversely, general surgeons in MTCs will manage an increased volume of major trauma cases.

14.3 Potential solutions

- Surgeons will require training in damage control surgery and early total care, as well as trauma-specific decision making skills. These can be developed through rotations to established trauma centres and engagement with armed forces training programmes, courses at the Royal College of Surgeons (RCS), dedicated trauma fellowships, regional networked education and specialist advisory committee (SAC)/postgraduate medical education and training board (PMETB) recognised trauma training programmes.

- In the longer-term, a cohort of general surgeons with a special interest in trauma could be created through the establishment of a formal training programme, potentially mitigating concerns about future CCT holders’ lack of experience.

- Doctors from surgical specialties with changes in their practice resulting from disease prevalence, network management and the availability of alternative interventions (e.g. vascular surgery), may choose to take a lead role in trauma surgery.

14.4 Timescale

Providing existing general surgery consultants with relevant trauma specific training should be achievable relatively quickly and be prioritised.

Training a new cohort of trauma specialised general surgeons would take significantly longer. Few general surgeons currently have a registered special interest in trauma. Recruitment to general surgery trauma specialist positions is likely to take several years, with no dedicated training pathway in existence in England. London MTCs are currently developing training paths which may be rolled out in other parts of the country.

To ensure a future surgical workforce adequately trained in the principles of treating major trauma, an increased emphasis will be required on the surgical curriculum. Any surgical trainee aspiring to work in an MTC in the future will require clinical attachments to MTCs and TUs.
14.5 Data limitations

The NHS Information Centre census does not record general surgeons’ specific area of expertise. Centrally held and validated data on general surgeons’ level of major trauma activity is not currently available.

14.6 Expert comment

“Surgeons are very well placed to assure and develop in-patient trauma care. There will be 3 different tiers of general surgeons looking after injured patients in new regional trauma systems and each will require a different level of force generation, support and training. All will need access to skills courses that can equip them to make decisions and perform Damage Control Surgery for patients with life-threatening conditions. Trauma unit surgeons will face challenges in maintaining currency, and a range of network-based educational opportunities will need to be developed to prevent skill fade. Major trauma centre surgeons will need to organise themselves in to rotas that enable rapid and sustainable attendance at trauma calls, and will need to adapt to the impact of major trauma on existing workloads, freeing themselves up from elective commitments and ensuring availability and active participation in the care of those who do not require surgery as well as those who do. Finally, a new cadre of MTC-based surgeons need to be supported as they take on leadership and managerial roles in administering Trauma networks and Systems, and in delivering and co-ordinating ongoing care of trauma patients through to discharge and beyond. This small group – the Trauma Surgeon cadre – will need to be constituted through a proper training pathway that includes a post CCT fellowship and mentoring infrastructure. Defining the pathway and providing the training opportunities is a medium to longer term issue but one which must be urgently addressed due to the lag-time between initiation and completion of training.”

Mr Nigel Tai, Consultant Surgeon in General, Trauma, Vascular, Emergency & Critical Care Surgery, Barts and The London NHS Trust in London
15 TRAUMA & ORTHOPAEDIC SURGERY

15.1 Risk

The trauma and orthopaedic surgery workforce should have sufficient capacity within the current workforce in England to support the establishment of RTNs. The September 2009 Information Centre census recorded 1,796 FTE (1,872 headcount) consultants in the specialty. The consultant workforce expanded by 23% during the past five years based upon the Information Centre (IC) census. The supply of trauma and orthopaedic surgery consultants over the next ten years is forecast to increase to 2,116 FTE in 2018 (2,490 headcount), an average increase of 2.3% annually (see Figure 15).

Figure 15 – Historical and future supply of doctors in trauma & orthopaedic surgery

However, the requirement for 24/7 availability of consultant-level staff on site within 30 minutes in orthopaedic surgery may cause some issues, although this provision should be attainable through the active management of current contracts. Securing this degree of availability during working hours would be facilitated by ensuring planned and emergency activity receive equal attention within and possibly between hospitals. The ramifications of individual job-plans and contributions need to be understood to ensure solutions remain workable at individual and corporate levels.
15.2 Scale

- Populating trauma and orthopaedic consultant surgeon rotas may be more complex at MTCs than TUs. Depending on the geographical layout of the network, MTCs will need to plan to receive most if not all cases of major trauma in their region. Duty trauma and orthopaedic consultants at the MTC should therefore expect to be involved with major trauma cases and performing emergency orthopaedic surgery for a significantly larger proportion of their time, both in-hours and out-of-hours. Trauma and orthopaedic surgeons will have the highest operative workload of all specialties involved in the major trauma pathway. Taking full responsibility for planned or elective work during and immediately after such on-call duty periods is likely to be impracticable.

- There may be particular difficulty in attracting senior trauma and orthopaedic consultants to fulfil the overnight and weekend demands posed by MTCs

- At TUs, filling on-call arrangements is anticipated to be more easily managed. Non-MTCs should encounter a reduced number of major trauma cases being admitted for definitive care both in-hours and out-of-hours, resulting in less onerous rotas for trauma and orthopaedic surgeons and less of an impact on the elective workload. However, as a secondary effect of trauma reconfiguration, there may be a migration of trauma and orthopaedic trainee numbers away from TUs and into MTCs, with a greater dependency therefore upon the trauma & orthopaedic consultant in the initial trauma team.

15.3 Potential solutions

- There is little scope for skill-mix solutions. Initial assessment of the patient’s injuries may be completed by a doctor in emergency medicine or general surgery, but emergency orthopaedic trauma surgery will need consultant involvement and will need to be delivered by a consultant or appropriately experienced senior trainee.

- Workable and attractive rotas which protect elective activity where required.

- Where appropriate, elective orthopaedics can be performed in non-trauma receiving hospitals, which may have increased capacity due to a reduced trauma caseload. Consultants may need contracts in several trusts to continue participating in both emergency and planned orthopaedic work.
• The concept of consultant career progression needs to be addressed to ensure younger consultants are able to provide greater contribution to out-of-hours activity without compromising skill retention or opportunity to specialise.

• Rotations between the MTC and TU should be carefully managed to ensure that trainees receive adequate exposure to major trauma care.

15.4 Timescale

Rotas should be organised relatively quickly, but achieving sustainability is key, ensuring that out of hours responsibilities do not compromise the quality of elective procedures.

15.5 Data limitations

For the purposes of consistency within this document, NHS Information Centre census data has been used in preference to the British Orthopaedic Association’s annual workforce census. Further workforce information is available from this source, as outlined in the trauma workforce and data scoping report.

15.6 Expert comment

"Trauma and orthopaedic surgery workforce numbers and skill set would be sufficient, or could be developed, to establish RTNs. The required reconfiguration of services would, however, have a adverse effect on the provision of elective orthopaedic services.

Trauma and orthopaedic surgeons are an essential part of TUs and MTCs, and orthopaedics will continue in Local Emergency Hospitals (LEHs). More than 80% of major trauma patients will have musculo-skeletal injuries, and almost 100% of patients admitted to an MTC will require assessment by T&O. 24/7 T&O surgical support is essential at the TU and MTC. The level of support to be defined given unit protocols – varies from consultant resident on call through to consultation and 30 minute response for return to hospital.

Emergency orthopaedic surgery will need close consultant involvement, delivered by a consultant or senior trainee. Consultant input requires changes in working patterns and practices. Consultants are becoming more comfortable with the job planning cycle and incentivisation is possible, protecting elective activity."
The emphasis and attention to rehab at an early stage will demand input from orthopaedics – the truncal life-threatening injuries will have been dealt with, but the musculo-skeletal injuries, particularly peripheral, have a potential to impact greatly on return to function. Patient outcome is improved by timely intervention pre-hospital, and organised trauma team care in early stages. There are no clear data to show that integrated and early planning of rehab will have a beneficial effect, but intuitively this makes sense and would be thoroughly supported by the T&O specialty. This approach, integrating the latter stages of trauma care as well as enhancing the initial assessment and treatment of the trauma patient, will require new ways of thinking and organising services, co-ordinating more closely with others in the rehabilitation team.”

Mr Gavin Bowyer, Consultant Trauma & Orthopaedic Surgeon, Southampton University Hospitals NHS Trust
16 NEUROSCIENCES (NEUROSURGERY)

16.1 Risk

The establishment of RTNs may lead to neuroscience and neurosurgery services encountering a higher volume of patients and an increased overall workload, because of improved survival and transfer rates. There are only 35 neurosurgery units in the UK, with 213 FTE (220 headcount) consultants recorded in England by the 2010 NHS Information Centre census. The supply of neurosurgery consultants over the next ten years is forecast to increase to 319 FTE in 2018 (354 headcount), an average increase of 4.9% annually.

Figure 16 – Historical and future supply of consultants in neurosurgery

Cumulative historical workforce supply (FTE) and future consultant projections - Neurosurgery

Sources – NHS Information Centre census 1997-2010, Deanery Monitoring 2008, CfWI modelling

16.2 Scale

• This issue largely impacts at the MTC level, with consultant neurosurgeon availability required within 30 minutes, although consultant neurosurgery input is required throughout the network.

16.3 Potential Solutions

• Access to neurological rehabilitation services could be expanded (e.g. physiotherapy, speech therapy, occupational therapy, neuropsychology, and social work), reducing the dependence of patients with mild to moderate brain injury on acute settings of care.
• Staff may be encouraged to work extra shifts through incentivisation. This is likely to involve overtime payments in the short-term and contract renegotiation in the long-term.

16.4 Timescale

There is a relatively strong projected supply of CCT holders in neurosurgery, but consultant posts are likely to remain concentrated in a small number of units.

16.5 Data Limitations

Centrally held and validated data on neurosurgeons’ level of major trauma activity is not currently available.

16.6 Expert Comment

“Neurosurgery is a relatively small speciality (total 290 consultants UK and Eire) that will see an increase in workload in terms of head and spine injury when the trauma networks and centres are fully established. This includes patients with severe injury who are currently inappropriately managed in district hospitals (as of 2009 - 20% of patients managed outside neurosurgical units); patients with moderate head injury who are currently managed in district hospitals and who will be taken directly to trauma centres when the networks are up and running and patients with devastating non-survivable injuries who are currently not transferred.

If consultant delivered care is implemented for the management of severe and moderate injury (particularly surgery) there will need to be a substantial increase in consultant numbers.

We have calculated the impact on neurosciences of taking patients with mild / moderate injury that we do not currently admit but should be admitting (Mendelow et al, 2008).

In addition to acute management, the provision of neurorehabilitation facilities and workforce is variable nationally and overall deficient.”

Mr Peter Hutchinson, Reader and Honorary Consultant Neurosurgeon, Addenbrooke’s Hospital, University of Cambridge
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