Developing Geographical Lead Responsibilities for English Spinal Cord Injury Centres.

A Report of the CRG in Spinal Cord Injury

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Index

1. Executive Summary

The location and capacity of the existing Spinal Cord Injury Centres is the result of historical development over time and has resulted in a distribution of spinal cord injury beds which is not matched to the existing population distribution in England.

To ensure the best outcomes, and to prevent the particular complications which can arise from cord injury,patients with Spinal Cord Injury (SCI) require special expertise and facilities when they are treated in hospital.

There is insufficient capacity in the eight Specialised SCI Centres to admit every patient needing admission and in many cases the condition of the patient requires him or her to be treated in another setting.

In these circumstances the best solution is to bring the skills of the specialised SCI service to the patient and those caring for the patient, in the form of outreach visits to the patient and family, outreach advice to the treating team, training, and the agreement of joint protocols for the management of patients with SCI.

To achieve this, the Clinical Advisory Group for Major Trauma published guidelines that specify that all Major Trauma Centres (MTCs) must have a defined relationship with one SCI centre.

The National Spinal Cord Injury Strategy Board (NSCISB) commenced the LINKS Project (2011/12) which has been completed by the Clinical Reference Group for Spinal Cord Injury in March 2013.

Existing Referral routes were mapped, and the distance in miles and journey times by road and by public transport from each of the 22 major trauma centres to each of the eight Spinal Cord Injury Centres were established.

Option Appraisal was undertaken with an impact analysis, having regard for clinical relationships and in particular patient access.

The recommended option, number 9 page 14, represents the recommendation of the Clinical Reference Group for Spinal Cord Injury.It was discussed and approved by the Clinical Reference Group for Major Trauma on ……

Detailed protocols have been prepared and included as Appendix 6.

2. Introduction

England (and the northern part of Wales) is served by eight specialised Spinal Cord Injury (SCI) centres. These are located in the following hospitals:

- The James Cook University Hospital, Middlesbrough
- Southport & Formby District General Hospital, Southport
- Pinderfields General Hospital, Wakefield
- Northern General Hospital, Sheffield
- Robert Jones & Agnes Hunt Orthopaedic and District General Hospital, Oswestry
- Stoke Mandeville Hospital, Aylesbury
- Royal National Orthopaedic Hospital, Stanmore (London)
- Salisbury District General Hospital, Salisbury

The location and capacity of the existing Spinal Cord Injured Centres is the result of historical development over time following the founding of the National Spinal Cord Injury Centre at Stoke Mandeville by Sir Ludwig Guttmann in 1944. This has resulted in a distribution of spinal cord injury beds which is not matched to the existing population distribution in England. Further, over time relationships have developed between various hospitals and the spinal cord injury centres but these have not necessarily been the result of planned distribution of resources. A recent review of current referral patterns revealed that a number of hospitals were reported to be in the catchment of more than one Spinal Cord Injury Centre and a further number were not reported to be in the catchment of any of the Centres (appendix 1).

To ensure the best outcomes, and to prevent the particular complications which can arise from cord injury,patients with Spinal Cord Injury (SCI) require special expertise and facilities when they are treated in hospital; both immediately after they are injured/diagnosed, and also when admitted from the community later in life.Nationally, there are approximately 390 beds for Adults across the Spinal Cord Injury estate. Current referral patterns from across the NHS vary considerably and the distribution of beds does not support equality of access for English SCI patients with considerable differences in waiting times experienced to access a specialised bed. Referring centres may make referrals to a number of SCI centres and no one centre takes the lead for supporting patients in a geographical area prior to admission. This results in difficulties in effectively managing waiting lists and in sub-optimal support for patients in acute hospitals before they can be admitted to the specialised centre. There is substantial risk of avoidable complications and these can result in longer lengths of stay in the SCI centre and on occasion permanent disability.

There is insufficient capacity in the eight Specialised SCI Centres to admit every patient needing to be in hospital and in many cases the condition of the patient requires him or her to be treated in another setting. In these circumstances the best solution is to bring the skills of the specialised SCI service to the patient and those caring for the patient, in the form of outreach visits to the patient and family, outreach advice to the treating team, training, and the agreement of joint protocols for the management of patients with SCI. This can be achieved by linking all hospitals which

are likely to admit people with spinal cord injury to a specified Spinal Cord Injury Centre.

As part of the development of formal networks for the management of Major Trauma (two thirds of all Spinal Cord Injury is traumatic in nature), the Clinical Advisory Group for Major Trauma published guidelines that specify that all Major Trauma Centres (MTCs) must have a defined relationship with one SCI centre (1). This guidance also outlines that patients should be admitted directly from an MTC to a SCI Centre without being repatriated to a more local hospital in the interim. This advice has been reinforced by the "Advice on the Initial Management of Patients with Spinal Cord Injury" issued by the NSCISB (2). Given the pressure on beds within MTCs and the need to ensure that these beds are available for newly injured patients, achieving this aim would require more rapid transfer from MTC to SCI centre than is currently possible in many parts of the country.

The requirement to link all hospitals is to a Spinal Cord Injury Centre is confirmed in the National Care Pathways for Spinal Cord Injury, launched in 2012.

In 2011/12 and 2012/13 CQUIN schemes were developed to encourage outreach from SCI centres to patients prior to admission to ensure that patients were in optimal condition at time of admission to the SCI centre. However, without formal geographical responsibility for defined areas of the country, performance managing this was problematical.

As a result of these difficulties, the National Spinal Cord Injury Strategy Board (NSCISB) commenced the LINKS Project (2011/12) which has been completed by the Clinical Reference Group for Spinal Cord Injury in March 2013. Particular thanks are due to the Spinal Injuries Association (SIA), which undertook the initial survey to map the informal links and referral routes which already existed. (Appendix 1)

Appendix 6, added by the Clinical Reference Group, spells out what LINKS means in terms of the roles and responsibilities of the various parties.

3. Aims

In the context of the background above, the aim of the project was to develop recommendations that align SCI centres to geographical catchment areas in a way that meets the needs of the English (and north Wales) population as a whole. The purpose of this was to:

- Address the inequity in access currently experienced to the available specialised beds.
- Provide referrers with clarity about to whom to refer patients.
- Provide clarity to SCI centres about the areas of the country that they are expected to deliver outreach activity to, and to admit patients from.

- Achieve the strategic aim of each Major Trauma system having a defined relationship with one of the eight SCI centres.
- Provide a firm basis for future judgements about capacity in the SCI centres which have been difficult due to a sub-national commissioning approach and distortions of the needs analysis arising from uncoordinated referral patterns.

4. Methods

The NSCISB agreed to reflect the importance of the Links for patients immediately following traumatic Spinal Cord Injury, by first linking each Major Trauma Network to a SCIC. The other hospitals within those areas, which many treat several or occasional people with SCI, were then linked accordingly. It was also decided to link whole Trusts, rather than individual sites within Trusts, so as to facilitate the agreement of protocols.

This project brought together information from a number of stock-takes and analyses that contribute to informing the development of a number of options for geographical catchment area alignment for SCIs. These options have then been appraised and considered recommendations as to an optimal option have been made.

The sources of information that have informed the review are as follows:

- Mapping of existing referral arrangements – this work, undertaken by the Spinal Injuries Association, examined the current referral patterns and relationships between individual hospitals in England and the eight SCI centres.

- Census of beds across the English SCI estate – this work, undertaken by the South East Coast Specialised Commissioning Team, has established the number of beds in each of the SCI centres in England. This data is an important denominator in terms of developing proposals that provide a more equitable share of beds per head of population for the country.

- Understanding the population served by each of the 22 Trauma Networks in England. Given the strategic direction outlined in CAG guidelines for Major Trauma and the high proportion of SCI cases that are as a result of traumatic injury, it is logical to use the footprints of these networks as the basis for geographical alignment. The same footprints will also be used for non-traumatic Spinal Cord Injury.

- Mapping of travel distances and times between each MTC and each SCI Centre, in distance in miles by road; travel time by road; and travel time by public transport. For the purposes of consistency, the travel planner provided through the Direct.Gov.UK website was used for all three of these analysis with a common departure time/date (10.30am on Friday 17 August 2012).

5. Results

The number of SCI beds in England is given in Table 2.

		RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbrough	Pinderfields	Sheffield		**TOTAL**
Acute		7	18		15	10		32	16		**98**
Rehab		15	62	42	29	23	20		22		**213**
Elective		4	24						22		**50**
ITU			6			4			4		**14**
HDU						6	4				**10**
TV		5									**5**
TOTAL		**31**	**110**	**42**	**44**	**43**	**24**	**32**	**64**		**390**

Table 2. The number of adult SCI beds at each of the SCI centres in England.

The population of the Major Trauma Networks is provided in table 3. A fuller break down is included in appendix II.

Trauma Network	**Catchment**
North East London & Essex	3,467,000
South East London & Kent	3,125,000
South West London & Surrey	2,376,000
North West London	2,361,000
Sussex	1,510,000
East of England	4,256,000
Wessex	2,502,000
Thames Valley	1,907,000
Avon	2,725,000
South West Peninsula	1,619,000
West Midlands	2,774,480
Arden	2,019,750
Salop & Staffs	1,505,770
East Midlands	3,119,000
Merseyside	2,012,000
Greater Manchester	2,918,000
Lancashire	1,511,000
South Yorkshire	1,760,000
West Yorkshire	2,414,000
East Yorkshire	1,192,000
Teesside	1,053,500
Northern	1,964,500
North Wales	722,232
TOTAL	50,814,232

Table 3. The catchment population for each of England's 22 Trauma Networks

The catchment planning population for SCI beds of 50,814,232 includes the northern part of Wales served by English SCI centres. With 390 beds available for the population this equates to 7.7 beds per 1,000,000 head of population.

The distance in miles and journey times by road and by public transport from each of the 22 major trauma centres to each of the eight Spinal Cord Injury Centres are provided in appendix III. The "closest" Spinal Cord Injury Centre for some Major Trauma Centres varies significantly depending on whether distance, road travel time, or public transport travel time are considered.

The proximity of the Centre to the Major Trauma Centre is important for the newly injured patient but more especially for visitors. Following the initial rehabilitation, however, the patient will then undergo life-long follow up in the Spinal Cord Injury Centre. For these reasons it was decided to use road transport times as the measure of proximity as the majority of out patient visits and relatives visits would be made by private car or by patient transport ambulance (appendix III)

Existing links and referral routes

Across central and northern England and the south west peninsula, it was evident from the SIA survey that existing catchment areas were fairly clear; only a few Trusts were listed by more than one SCI Centre as referring patients to them.

However Current referral routes in the area covered by the South of England Consortium (London, East, South East Coast, Thames Valley, Wessex) were more fluid. Because of the close proximity of the three southern centres, and the current shortfall in capacity, many referring hospitals were in the habit of referring patients simultaneously to two or even three SCI centres. The Centres operated a common admissions policy whereby they allocate a bed according to how long the patient had been waiting, and not where the patient is located. The patient was usually admitted to which ever Centre has the first available bed. As a consequence Stoke Mandeville and RNOH Stanmore were admitting patients from the same hospitals, and there was also a substantial overlap between them and Salisbury in the areas they serve. This is reflected in the results of the SIA survey (Appendix 1) which showed that Stoke Mandeville (the largest Centre) admitted patients from a large proportion of the hospitals, whereas RNOH Stanmore felt unable to put forward a list.

Consequently, across the south (with the exception of the established flow from the SW Peninsula to Salisbury) although some individual clinicians tended to refer to one SCI Centre rather than the other two, it was not possible to map any clear flows of patients between Trusts and SCI Centres, or any status quo. This impeded the agreement of joint protocols on the management of SCI patients.It also made it difficult for the outreach teams in the three Centres, who had to liaise carefully to ensure they are not visiting the same patient. All three Southern SCI Centres now support the concept of LINKS project and the final recommendation below.

6. Options

Eight configuration options were generated utilising the 4 analyses outlined in Section 4 above. These analyses have been developed reflecting the available variables and are presented in Appendix 4.

None of these options satisfied the overall needs of the service, particularly in patient accessibility and the existing clinical links between Centres. After considering theeight options at its final meeting on 30th November 2012, the NSCISB proposed some minor adaptations to Option 8. Although the initial aim was to link all the participating hospitals in a Major Trauma Network to one SCI, in two cases - Arden and East of England - the geographical spread of the major trauma network, and the location of the nearest SCI Centres, suggested that a different relationship would best suit patients who live in part of the network area. This was discussed with the networks concerned.

The East of England MTC has agreed a split whereby if the patient is from Bedfordshire, Hertfordshire, Essex or Cambridge, then they will be referred to Stoke Mandeville. Patients from Norfolk, Suffolk or northern Cambridgeshire will be referred to Sheffield. This will cause an alteration of the beds ratio.

Arden now called Central England. From available beds point of view the best centre for this MTC would be Stoke Mandeville. However, the West Midlands MTC based in Birmingham, the Salop and Staffs MTC based in Stoke on Trent and the Central England MTC based in Coventry have developed a group super network where they have regular meetings and co-operate with clinical pathways, transport etc. The team in Oswestry present to this meeting on a regular basis. After discussion with Arden MTC and the SCIC in Oswestry and Stoke Mandeville, it is proposed that if the patient is from Northamptonshire (Northampton and Kettering) or Milton Keynes, then they will be referred to Stoke Mandeville. All remaining areas will be referred to Oswestry. This will provide the best geographical relationship for patients.

London and Sussex

The five Trauma Centres in the South East of the Country represent the most geographically challenging areas of population in relation to the location of existing beds. In terms of capacity it is clear that the Royal National Orthopaedic Hospital could undertake to serve no more than two of these Centres and that Stoke with its greater bed capacity should serve at least 3.

Sussex

Considering the road journey time, the difference between a journey to the Royal National Orthopaedic Hospital, Stanmore and Stoke Mandeville for the Sussex MTC (Brighton) is only eight minutes. To optimise bed usage and considering patient access it is proposed that for this Centre should be referring to Stoke Mandeville as the difference in travel time is minimal.

London

Considering the road journey time, the difference between a journey to the Royal National Orthopaedic Hospital, Stanmore and Stoke Mandeville for South East London MTC (Kings) is only nine minutes. To optimise bed usage and considering patient access it is proposed that for this Centre should be referring to Stoke Mandeville as the difference in travel time is minimal.

The difference in travel time for the other three Major Trauma Centres (North East London, North West London and South West London, is actually almost identical at 38 minutes, 38 minutes and 36 minutes respectively.

The Royal National Orthopaedic Hospital is situated on the East side of the catchment area of the North West London Trauma Centre, meaning that the majority of the population in this area will be to the West of Stanmore. This means that for most patients in the North West London MTC catchment the difference in driving time between Stoke and Stanmore will be less than from St Mary's, Paddington, from which measurements were taken.

The majority of patients in the North East London catchment area would travel past the Royal National Orthopaedic Hospital if they were directed to Stoke.

It was, therefore, suggested that the two catchments in the North of London would be allocated geographically and that North West London would be allocated to Stoke Mandeville and North East London to the Royal National Orthopaedic Hospital at Stanmore.

South West London would be the second of the Centres allocated to the Royal National Orthopaedic Hospital, Stanmore. This also fitted well with clinical relationships.

This was adopted as the preferred option by the Spinal Cord Injury CRG on 12 March 2013 and designated Option 9.

Consultation with the Major Trauma CRG.

The Links paper was presented at the Major Trauma CRG on 30 April 2013, and received approval for all senate areas subject to further discussions on the situation in London.

During these further discussions concerns were expressed over journey times from Trauma Units in the East of the catchment of South East London, the existing clinical relationships between MTCs and the SCICs and the lack of a common sense feel to the existing proposal. On this basis a further option was presented for discussion – Option 10 (p. 56). In this option NW London and SW London would be linked to Stoke Mandeville, and NE London and NE London linked to Stanmore

On 23 May 2013 this proposal was discussed further between representatives from the two CRGs, the London Trauma System and the London CRG Senate Members.

It was noted that the differences in travel times from the East of the catchments were small, both in absolute terms and in percentage terms (Table 4).

Table 4.LONDON Trauma Centres
Travel times by private transport

MTC	Hospital	SCIC	Journey time	Difference	% difference
North East	Royal London	RNOH Stoke	0:59 1:37	-38 mins	64 %
	South End	RNOH Stoke	1:15 1:39	-24 mins	24 %
North West	St Mary's	RNOH Stoke	1:18 1:54	-36 mins	46 %
South East	King's	RNOH Stoke	1:31 1:40	- 9 mins	10 %
	Dover	RNOH Stoke	2:01 2.25	-24 mins	20 %
South West	St George's	RNOH Stoke	0:47 1:23	-36 mins	77 %

SCIC = Spinal Cord Injury Centre
RNOH = Royal National Orthopaedic Hospital, Stanmore
Stoke = Stoke Mandeville SCIC

However, in this option the impact of a geographic split of this nature would mean a significant increase in journey times for patients from the catchment of South West London MTC of some 36 minutes or 77% of the journey time if travelling to Stoke rather than Stanmore.

A further impact of this option would be a serious and unsustainable increase in the pressure on facilities at Stanmore. South East London has a catchment of approximately 800,000 patients greater than South West London. This would result in approximately 15 more admissions per annum and mean that Stanmore would have a bed shortage of almost 20 as compared to the National average.

On 23 May 2013 it was agreed that the combination of these two factors and particularly the increased pressure on Stanmore meant that Option 10 was not sustainable or viable as a preferred option,and that Option 9 would be supported by the Major Trauma CRG.

It was also agreed that the referral patterns would be kept under quarterly review by a joint group from both CRGs, using data from the SCI National Database. A strategic review would be initiated by the SCI CRG and the Trauma Programme of Care Board of the provision of SCI services in the South east of England.

It must be recognised that this pattern of linkages has been designed to make the most appropriate referral pattern in the current circumstances. As developments occur both in the Spinal Cord Injury Centres and in the Major Trauma Centres, circumstances may arise where it would be more appropriate to consider changing linkages and of course this will be possible. The distribution of beds in spinal cord injury centres is a historic legacy. In the future developments may be able to be directed on a more planned basis to further improve equity of access for the people that the Centres serve.The Strategic Review will inform this process.

The linkages do not preclude referral to a different SCIC if indicated by individual circumstances (seeAdmission to non-Linked SCIC p.78).

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Following initial rehabilitation, patients may exercise choice over the location of their continuing care.

7. Impact /Change

It has proved possible, on the whole,to link SCI Centres with those hospitals with which they had a long-term relationship. In the following areas the formalisation of the LINKSproject represents little or no change to existing referral flows, as mapped by the SIA:

East of England - northern part (where Norfolk and part of Suffolk mapped to Sheffield)
East of England – southern part (where South Cambridgeshire and Hertfordshire mapped to Stoke Mandeville)
Wessex
Thames Valley
Avon
South West Peninsula
West Midlands
Arden (where Kettering, Northampton and Milton Keynes mapped to Stoke Mandeville and the remainder to Oswestry)
Salop & Staffs
East Midlands
Merseyside
Greater Manchester
Lancashire
South Yorkshire
West Yorkshire
East Yorkshire
Teesside
Northern
North Wales

As described above changes in the south east -

North East London & Essex
South East London & Kent
South West London & Surrey
North West London
Sussex

were from an unplanned system, with multiple referrals, and beds allocated on a first come first served basis, to one where hospitals have an agreed first point of contact.

It should be noted that the project maps every NHS Trust, including single specialty Trusts (e.g. heart, eye hospitals etc.). Most hospitals should never see a newly injured patient with SCI. Many will only rarely encounter a patient who is living with SCI, but still need to know who contact when they do.

It is also important to stress that under the roles and responsibilities described in Appendix 6, the responsibility of the linked SCIC is to provide the outreach service and agree joint protocols. It is expected that, over time and following a review of demand and capacity, the default position will be that patients are referred and admitted to the linked SCIC, and the linked SCIC will take responsibility for patients within its catchment area, unless there is a reason (paediatrics, out of area etc.) for them to go elsewhere.

However the recommendation in this paper does not restrict the referring hospital to only referring to the linked SCI Centre. If the clinician has a reason to refer the patient to a different SCI Centre he/she can continue to do so. If a bed becomes available in a non-linked SCIC, the patient can be transferred there. If patients with SCI move to another part of the country, they can continue to be followed up by 'their' SCI Centre, unless they request to change to one nearer.

8. Conclusions and Recommendation

The Recommended linkages for the MTCs to their SCICs are shown in Option 9

	Option 9				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Recommended												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**Stoke M**		3,125,000							
3	South West London & Surrey	2,376,000	4.68%	**RNOH**	2,376,000								
4	North West London	2,361,000	4.65%	**Stoke M**		2,361,000							
5	Sussex	1,510,000	2.97%	**Stoke M**		1,510,000							
6	East of England (North)	1,900,000	3.74%	**Sheffield**								1,900,000	
	East of England (South)	2,356,000	4.64%	**Stoke M**		2,356,000							
7	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
8	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
9	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
10	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
11	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
12	Arden (West)	1,151,750	2.27%	**RJAH**				1,151,750					
	Arden (South)	868,000	1.71%	**Stoke M**		868,000							
13	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
14	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
15	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
16	Greater Manchester	2,918,000	5.74%	**Southport**					2,918,000				
17	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
18	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
19	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
20	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
21	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
22	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
23	*North Wales*	722,232	1.42%	**RJAH**				722,232					
		50,814,232	100.00%	**TOTAL**	5,843,000	12,127,000	6,846,000	6,154,232	6,441,000	3,018,000	3,606,000	6,779,000	50,814,232
				% Population	11.5%	23.9%	13.5%	12.1%	12.7%	5.9%	7.1%	13.3%	100.0%
				Difference Popn	1,803,920	- 2,205,219	1,373,698	421,344	838,405	- 109,030	- 563,373	- 1,559,746	
				Difference %	3.6%	-4.3%	2.7%	0.8%	1.6%	-0.2%	-1.1%	-3.1%	
				Beds Per Million	5.3	9.1	6.1	7.1	6.7	8.0	8.9	9.4	7.7
				Variation from average	-13.85	16.93	-10.54	-3.23	-6.43	0.84	4.32	11.97	

9. References

1. Management of People with Spinal Cord Injury
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26th August 2011

http://www.excellence.eastmidlands.nhs.uk/welcome/improving-care/emergency-urgent-care/major-trauma/nhs-clinical-advisory-group/

2. The Initial Management of Adults with Spinal Cord Injuries
Advice for Major Trauma Networks and SCI Centres
on the Development of Joint Protocols
With Advice for Clinicians in Acute Hospitals

http://www.excellence.eastmidlands.nhs.uk/welcome/improving-care/emergency-urgent-care/major-trauma/major-trauma-related-documents/

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Appendix 1 below shows the mapping of existing referral relationships between English NHS Trusts and the eight Spinal Cord Injury centres. This is taken from the work undertaken by the Spinal Injuries Association.

Spinal Cord Injury Centre	Contested	Middlesbrough	Pinderfields Wakefield	Sheffield	Southport & Formby Hospital	RJAH Oswestry	Stoke Mandeville Hospital	Salisbury District Hospital	RNOH Stanmore	'Negatively' Contested
Clinical Senate										
North East, North Cumbria, and the Hambleton & Richmondshire districts of North Yorks		City Hospitals Sunderland NHS Foundation Trust								
"		County Durham and Darlington NHS F Trust								
"		County Durham PCT								
"		Gateshead Health NHS Foundation Trust								
"		North Tees and Hartlepool NHS Foundation Trust								
"		Northumbria Healthcare NHS Foundation Trust								
"		South Tees Hospitals NHS Foundation Trust								
"		South Tyneside NHS Foundation Trust								
"		The Newcastle Upon Tyne Hospitals F. Trust								
"		North Cumbria Acute Hospitals NHS Trust								

Spinal Cord Injury Centre	Contested	Middlesbrough	Pinderfields Wakefield	Sheffield	Southport & Formby Hospital	RJAH Oswestry	Stoke Mandeville Hospital	Salisbury District Hospital	RNOH Stanmore	'Negatively' Contested
Clinical Senate										
Yorkshire & The Humber	Northern Lincolnshire & Goole Hospitals Foundation Trust									
"	Scarborough and North East Yorkshire Healthcare Trust									
"		Airedale NHS Trust								
"		Bradford Teaching Hospitals NHS Foundation Trust								
"		Calderdale and Huddersfield NHS Foundation Trust								
"		Harrogate and District NHS Foundation Trust								
"		Hull and East Yorkshire Hospitals NHS Trust								
"		Leeds Teaching Hospitals NHS Trust								
"		Mid Yorkshire Hospitals NHS Trust								
"		Scarborough and North East Yorkshire Healthcare Trust								
"		York Hospitals NHS Foundation Trust								
"				Barnsley Hospital NHS Foundation Trust						
"				Doncaster and Bassetlaw Hospitals NHS Foundation						
"				Sheffield Teaching Hospitals NHS Foundation Trust						
"				The Rotherham NHS Foundation Trust						
Cheshire & Merseyside				East Cheshire NHS Trust						
"					Aintree University Hospitals NHS Foundation Trust					
"					Alder Hey Children's NHS Foundation Trust					
"					Liverpool Heart and Chest F Trust					
"					Royal Liverpool and Broadgreen University Hospitals NHS Trust					
"					Southport and Ormskirk Hospital NHS Trust					
"					St Helens and Knowsley Hospitals NHS Trust					
"					The walton Centre for Neurology and Neurosurgery NHS Trust					
"					Warrington and Halton Hospitals NHS Foundation Trust					
"					Wirral University Teaching Hospital NHS Foundation Trust					
"						Countess of Chester Hospital NHS Foundation Trust				
"						East Cheshire NHS Trust				
"						Mid Cheshire Hospitals NHS Foundation Trust				
"										Clatterbridge Centre for Oncology NHS F Trust
"										Liverpool Women's NHS Foundation Trust
"										Mid Cheshire Hospitals NHS Foundation Trust

Spinal Cord Injury Centre	Contested	Middlesbrough	Pinderfields Wakefield	Sheffield	Southport & Formby Hospital	RJAH Oswestry	Stoke Mandeville Hospital	Salisbury District Hospital	RNOH Stanmore	'Negatively' Contested
Clinical Senate										
Greater Manchester, Lancashire and South Cumbria					Blackpool, Fylde and Wyre Hospitals NHS Foundation Trust					
"					Central Manchester University Hospitals NHS Foundation Trust					
"					East Lancashire Hospitals NHS Trust					
"					Lancashire Teaching Hospitals NHS Foundation Trust					
"					Pennine Acute Hospitals NHS Trust					
"					Royal Bolton Hospital NHS Foundation Trust					
"					Salford Royal NHS Foundation Trust					
"					Stockport NHS Foundation Trust					
"					Tameside Hospital NHS Foundation Trust					
"					Trafford Healthcare NHS Trust					
"					University Hospital of South Manchester NHS Foundation Trust					
"					University Hospitals of Morecambe Bay NHS Trust					
"					Wrightington, Wigan and Leigh NHS Foundation Trust					
"										The Christie NHS Foundation Trust
West Midlands				Burton Hospitals NHS Foundation Trust						
"					Birmingham Children's Hospital NHS Foundation Trust					
"						Birmingham Womens NHS F. Trust				
"						George Eliot Hospital NHS Trust				
"						Heart of England NHS Foundation Trust				
"						Hereford Hospitals NHS Trust				
"						Mid Staffordshire NHS Foundation Trust				
"						Robert Jones and Agnus Hunt Orthopeadic Trust				
"						Sandwell and West Birmingham Hospitals NHS Trust				
"						Shrewsbury and Telford Hospitals NHS Trust				
"						South Warwickshire General Hospitals NHS Trust				
"						The Dudley Group of Hospitals NHS Foundation Trust				
"						The Royal Orthopaedic Hospital NHS Foundation Trust				
"						The Royal Wolverhampton Hospitals NHS Trust				
"						University Hospital Birmingham NHS Foundation Trust				
"						University Hospital of North Staffordshire NHS Trust				
"						University Hospitals Coventry and Warwickshire Trust				
"						Walsall Hospitals NHS Trust				
"						Worcestershire Acute Hospitals NHS Trust				
East Midlands	Nottingham University Hospitals NHS Trust									
"	University Hospitals of Leicester NHS Trust									
"				Chesterfield Royal Hospital NHS Foundation Trust						
"				Derby Hospitals NHS Foundation Trust						
"				Derbyshire County PCT Babington Hospital						
"				Doncaster and Bassetlaw Hospitals Foundation						
"				Sherwood Forest Hospitals NHS Foundation Trust						
"				United Lincolnshire Hospitals NHS Trust						
"				University Hospitals of Leicester NHS Trust						
"							Kettering General Hospital NHS Foundation Trust			
"							Northampton General Hospital NHS Trust			
"							Milton Keynes Hospital NHS Foundation Trust			
"										Kettering General Hospital NHS Foundation Trust

Spinal Cord Injury Centre	Contested	Middlesbrough	Pinderfields Wakefield	Sheffield	Southport & Formby Hospital	RJAH Oswestry	Stoke Mandeville Hospital	Salisbury District Hospital	RNOH Stanmore	'Negatively' Contested
Clinical Senate										
East Of England	Ipswich Hospital NHS Trust									
"	Papworth Hospitals NHS F. Trust									
"				Hinchingbrooke Healthcare NHS Trust						
"				James Paget University Hospitals NHS F Trust						
"				Norfolk and Norwich University Hospitals F Trust						
"				Peterborough and Stamford Hospitals NHS F Trust						
"				The Queen Elizabeth Hospital King's Lynn Trust						
"				West Suffolk Hospitals NHS Trust						
"							Basildon University Hospital			
"							Bedford Hospital NHS Trust			
"							Cambridge University Hospitals NHS F Trust			
"							Colchester Hospital University NHS F Trust			
"							East and North Hertfordshire NHS Trust			
"							Luton and Dunstable Hospital NHS F Trust			
"							Mid Essex Hospital Services NHS Trust			
"							Southend University Hospital NHS Foundation Trust			
"							The Princess Alexandra Hospital NHS Trust			
"							West Hertfordshire Hospitals NHS Trust			
"										Basildon and Thurrock University Hospitals F Trust
"										Cambridge University Hospitals NHS F Trust
"										Colchester Hospital University NHS F Trust
"										East and North Hertfordshire NHS Trust
"										Mid Essex Hospital Services NHS Trust
"										The Princess Alexandra Hospital NHS Trust
"										Cambridge University Hospitals NHS F Trust
"										Cambridge University Hospitals NHS F Trust
"										Mid Essex Hospital Services NHS Trust
London	Barts and The London NHS Trust									
"	Imperial College Healthcare NHS Trust									
"	King's College Hospital NHS Foundation Trust									
"	St George's Healthcare NHS Trust									
"							Barking, Havering and Redbridge Hospitals NHS Trust			
"							Barnet and Chase Farm Hospitals NHS Trust			
"							Barts and The London NHS Trust			
"							Camden PCT			
"							Chelsea and Westminster Hospital NHS Foundation Trust			
"							Croydon health Services Trust			
"							Ealing Hospital NHS Trust			
"							Epsom and St Helier University Hospitals NHS Trust			
"							Great Ormond Street Hospital for Children NHS Trust			
"							Guy's and St Thomas' NHS Foundation Trust			
"							Homerton University Hospital NHS Foundation Trust			
"							Imperial College Healthcare NHS Trust			
"							Kingston Hospital NHS Trust			
"							Kingston PCT			
"							Newham University Hospital NHS Trust			
"							North Middlesex University Hospital NHS Trust			
"							North West London Hospitals NHS Trust			
"							Royal Brompton & Harefield Trust			
"							Royal Free Hampstead NHS Trust			
"							South London Healthcare Trust			
"							The Hillingdon Hospital NHS Trust			
"							The Lewisham Hospital NHS Trust			
"							The Whittington Hospital NHS Trust			
"							University College London Hospitals NHS F Trust			
"							West Middlesex University Hospital NHS Trust			
"							Whipps Cross University Hospital NHS Trust			
"									Royal National Orthopaedic Hospital NHS Trust	
"										Royal Brompton & Harefield Trust
"										Royal Free Hampstead NHS Trust
"										The Royal Marsden Hospital F. Trust
"										University College London H F Trust
"										Imperial College Healthcare NHS Trust
"										Moorfields Eye Hospital NHS F Trust
Thames Valley							Buckinghamshire Hospitals NHS Trust			
"							Heatherwood and Wexham Park Hospitals NHS F Trust			
"							Nuffield Orthopaedic Centre NHS Trust			
"							Oxford Radcliffe Hospitals NHS Trust			
"							Royal Berkshire NHS Foundation Trust			

Spinal Cord Injury Centre	Contested	Middlesbrough	Pinderfields Wakefield	Sheffield	Southport & Formby Hospital	RJAH Oswestry	Stoke Mandeville Hospital	Salisbury District Hospital	RNOH Stanmore	'Negatively' Contested
Clinical Senate										
Wessex	Portsmouth Hospitals NHSTrust									
"	Southampton UniversityHospitals NHS Trust									
"								The Royal Bournemouth & Christchurch Trust		
"								Poole Hospital NHS Foundation Trust		
"								Basingstoke and North Hampshire NHS F Trust		
"								Isle Of Wight Healthcare		
"								Portsmouth Hospitals NHS Trust		
"								Southampton University Hospitals NHS Trust		
"								Winchester and Eastleigh Healthcare NHS Trust		
South East Coast	**Brighton and Sussex University Hospitals Trust**									
"	**Frimley Park Hospital NHS Foundation Trust**									
"							Ashford and St Peter's Hospitals NHS Trust			
"							Brighton and Sussex University Hospitals Trust			
"							Dartford and Gravesham NHS Trust			
"							East Kent Hospitals University NHS F Trust			
"							East Sussex Hospitals NHS Trust			
"							Frimley Park Hospital NHS Foundation Trust			
"							Maidstone and Tunbridge Wells NHS Trust			
"							Medway NHS Foundation Trust			
"							Queen Victoria Hospital NHS Foundation Trust			
"							Surrey and Sussex Healthcare NHS Trust			
"								Brighton and Sussex University Hospitals Trust		
"								East Sussex Hospitals NHS Trust		
"								Royal Surrey County Hospital NHS Trust		
"								Western Sussex Hospitals NHS Trust		
"										Dartford and Gravesham NHS Trust
"										East Kent Hospitals University NHS F Trust
"										East Sussex Hospitals NHS Trust
"										Maidstone and Tunbridge Wells NHS Trust
"										Medway NHS Foundation Trust
South West	North Bristol NHS Trust									
"	Uni Hospitals of Bristol NHS Foundation Trust									
"	Weston Area Health NHS Trust									
"								Cornwall and the Isle of Scilly PCT		
"								Dorset County Hospital NHS Foundation Trust		
"								Gloucestershire Hospitals NHS Foundation Trust		
"								Great Western Hospitals NHS Foundation Trust		
"								Northern Devon Healthcare NHS Trust		
"								Plymouth Hospitals NHS Trust		
"								Royal Cornwall Hospitals NHS Trust		
"								Royal Devon and Exeter NHS Foundation Trust		
"								R.Nat H for Rheumatic Diseases Trust		
"								Royal United Hospital Bath NHS Trust		
"								Salisbury NHS Foundation Trust		
"								South Devon Healthcare NHS Foundation Trust		
"								Taunton and Somerset Foundation Trust		
"								Uni Hospitals of Bristol NHS Foundation Trust		
"								Yeovil District Hospital NHS Foundation Trust		
"										Gloucestershire Hospitals NHS Trust

Appendix 2 – Mapping catchment populations for each Trauma System

Trauma Network	Major Trauma Centre	Catchment Area	Population	
North East London & Essex	Royal London Hospital	Waltham Forest PCT	222,000	
		Redbridge PCT	247,000	
		Havering PCT	225,000	
		City & Hackney PCT	216,000	
		Newham PCT	248,000	
		Barking & Dagenham PCT	165,000	
		Tower Hamlets PCT	209,000	
		Barnet PCT	327,000	
		Enfield PCT	280,000	
		Haringey PCT	224,000	
		Camden PCT	217,000	
		Islington PCT	180,000	
		South West Essex PCT	382,000	
		South East Essex PCT	325,000	**3,467,000**
South East London & Kent	Kings College Hospital	Bexley Care Trust	220,000	
		Bromley PCT	299,000	
		Greenwich PCT	226,000	
		Lambeth PCT	268,000	
		Lewisham PCT	247,000	
		Southwark PCT	255,000	
		Eastern & Coastal Kent PCT	705,000	
		Medway PCT	262,000	
		West Kent PCT	643,000	**3,125,000**
South West London & Surrey	St George's Hospital, Tooting	Croydon PCT	340,000	
		Kingston PCT	152,000	
		Richmond & Twickenham PCT	183,000	
		Sutton & Merton PCT	370,000	
		Wandsworth PCT	276,000	
		Surrey PCT	1,055,000	**2,376,000**

North West London	St Mary's Hospital, Paddington	Hillingdon PCT	249,000	
		Harrow PCT	211,000	
		Ealing PCT	303,000	
		Brent PCT	268,000	
		Hammersmith & Fulham PCT	177,000	
		Hounslow	212,000	
		Kensington & Chelsea PCT	184,000	
		Westminster PCT	230,000	
		West Hertfordshire	527,000	**2,361,000**
Sussex	Royal Sussex Hospital, Brighton	East Sussex Downs & Weald PCT	326,000	
		Hastings & Rother PCT	170,000	
		Brighton & Hove City PCT	252,000	
		West Sussex PCT	762,000	**1,510,000**
East of England	Addenbrookes Hospital, Cambridge	Peterborough PCT	159,000	
		Norfolk PCT	718,000	
		Cambridgeshire PCT	579,000	
		Suffolk PCT	566,000	
		Great Yarmouth & Waveney PCT	216,000	
		Bedfordshire PCT	392,000	
		Luton PCT	184,000	
		East & North Hertfordshire PCT	515,000	
		West Essex PCT	269,000	
		Mid Essex PCT	356,000	
		North East Essex PCT	302,000	**4,256,000**
Wessex	Southampton University Hospital	Dorset PCT	400,000	
		Bournemouth & Poole PCT	301,000	
		Hampshire PCT	1,253,000	
		Southampton City PCT	221,000	
		Portsmouth City PCT	189,000	
		Isle of Wight Healthcare PCT	138,000	**2,502,000**
Thames Valley	Oxford Radcliffe Hospital	Oxfordshire PCT	595,000	
		Buckinghamshire PCT	494,000	
		Berkshire West PCT	441,000	
		Berkshire East PCT	377,000	**1,907,000**

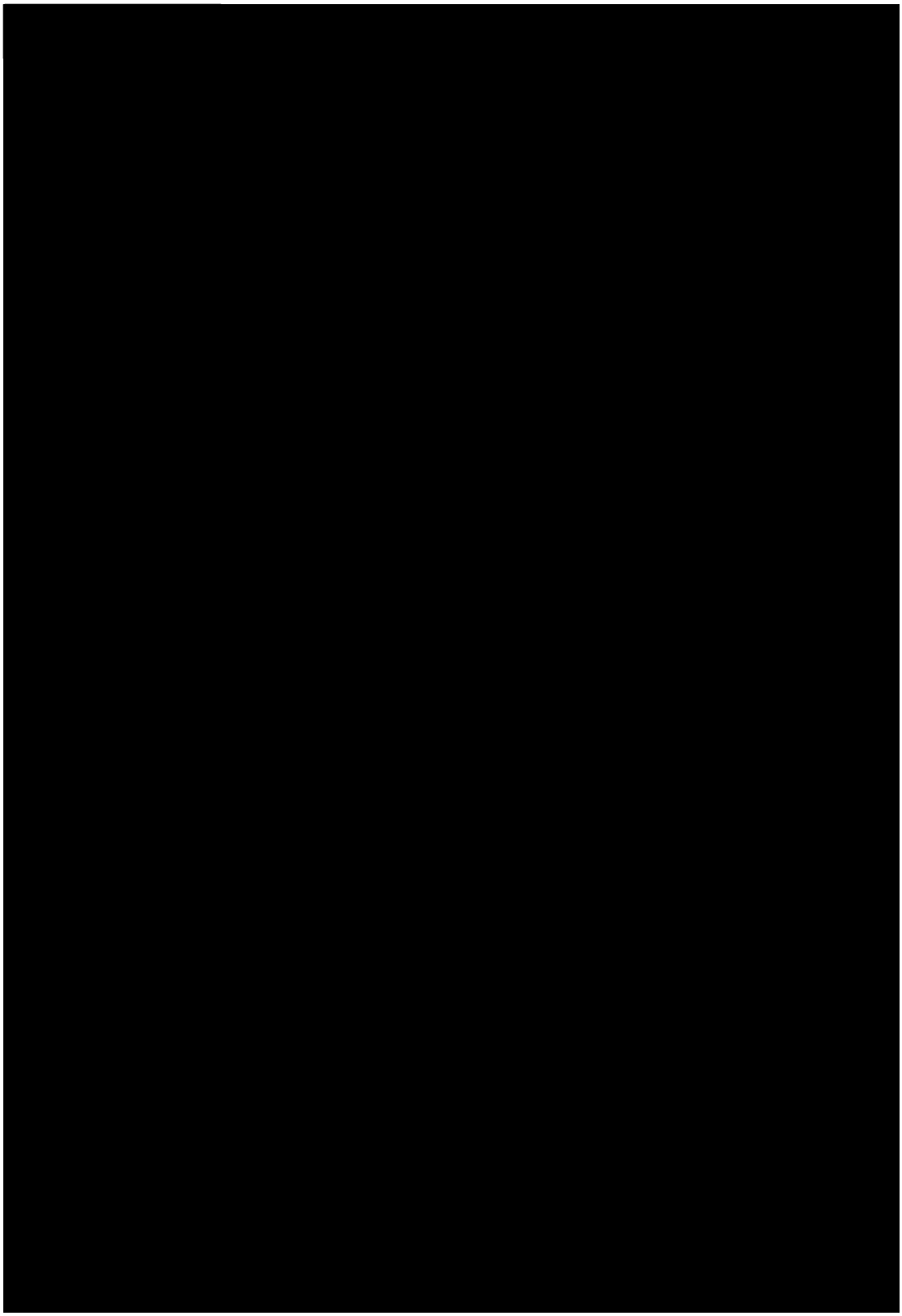
Avon	Frenchay Hospital, Bristol	Gloucestershire PCT	573,000	
		South Gloucestershire PCT	248,000	
		Bristol Teaching PCT	394,000	
		North Somerset PCT	193,000	
		Bath & North East Somerset PCT	172,000	
		Swindon PCT	188,000	
		Wiltshire PCT	445,000	
		Somerset PCT	512,000	**2,725,000**
South West Peninsula	Derriford Hospital, Plymouth	Cornwall & Isles of Scilly PCT	517,000	
		Plymouth PCT	244,000	
		Devon PCT	725,000	
		Torbay Care Trust	133,000	**1,619,000**
West Midlands	Queen's Hospital, Birmingham	Shropshire County PCT (SOUTH)	72,000	
		South Staffordshire PCT (SOUTH WEST)	243,950	
		Solihull PCT (NORTH)	110,000	
		Warwickshire PCT (NORTH)	47,250	
		Wolverhampton City PCT (SOUTH)	97,990	
		Walsall PCT (SOUTH)	159,390	
		Dudley PCT	304,000	
		Sandwell PCT	286,000	
		Heart of Birmingham PCT	252,000	
		Birmingham East & North PCT (INNER)	276,020	
		South Birmingham PCT	367,000	
		Herefordshire PCT	178,000	
		Worcestershire PCT (NORTH)	380,880	**2,774,480**
Arden	University Hospital Coventry	Solihull PCT (SOUTH)	90,000	
		Birmingham East & North PCT (OUTER)	96,980	
		South Staffordshire PCT (SOUTH EAST)	11,900	
		Worcestershire PCT (SOUTH)	171,120	
		Coventry PCT	304,000	
		Warwickshire PCT (SOUTH)	477,750	
		Northamptonshire PCT	647,000	
		Milton Keynes PCT	221,000	**2,019,750**

Salop & Staffs	University Hospital of North Staffs, Stoke	Shropshire County PCT (NORTH)	216,000	
		Telford & Wrekin PCT	161,000	
		North Staffordshire PCT	210,000	
		Stoke on Trent PCT	245,000	
		South Staffordshire PCT (NORTH)	339,150	
		Walsall PCT (NORTH)	93,610	
		Wolverhampton City PCT (NORTH)	141,010	
		East Cheshire (Crewe &Alsager)	100,000	**1,505,770**
East Midlands	Queens Medical Centre, Nottingham	Derbyshire County PCT (South)	340,000	
		Derby City PCT	234,000	
		Nottingham City PCT	275,000	
		Nottinghamshire County PCT	649,000	
		Lincolnshire PCT	676,000	
		Leicester City PCT	285,000	
		Leicestershire County & Rutland PCT	660,000	**3,119,000**
Merseyside	Liverpool Hospitals	Sefton PCT	282,000	
		Wirral PCT	313,000	
		Liverpool PCT	444,000	
		Knowsley PCT	150,000	
		Halton& St Helens PCT	296,000	
		Warrington PCT	194,000	
		West Cheshire PCT	233,000	
		Central Lancashire PCT (Ormskirk&Skelmersdale)	100,000	**2,012,000**
Greater Manchester	Manchester	Ashton, Leigh & Wigan PCT	305,000	
		Bolton PCT	265,000	
		Bury PCT	182,000	
		Rochdale, Heywood & Middleton PCT	206,000	
		Salford PCT	216,000	
		Trafford PCT	213,000	
		Manchester PCT	437,000	
		Oldham PCT	218,000	
		Tameside & Glossop PCT	247,000	
		Stockport PCT	282,000	
		East Cheshire (North)	347,000	**2,918,000**

Lancashire	Preston Royal Infirmary	North Lancashire PCT	322,000	
		Blackpool PCT	143,000	
		East Lancashire PCT	382,000	
		Central Lancashire PCT (North)	349,000	
		Blackburn with Darwen PCT	140,000	
		Cumbria PCT (South of Morecambe Bay)	175,000	**1,511,000**
South Yorkshire	Northern General Hospital, Sheffield	Derbyshire PCT (North)	372,000	
		Barnsley PCT	221,000	
		Sheffield PCT	516,000	
		Rotherham PCT	252,000	
		Doncaster PCT	289,000	
		Bassetlaw PCT	110,000	**1,760,000**
West Yorkshire	Leeds General Infirmary	Bradford & Airedale PCT	481,000	
		Leeds PCT	720,000	
		Calderdale PCT	194,000	
		Kirklees PCT	393,000	
		Wakefield PCT	320,000	
		North Yorkshire & York PCT (SW)	306,000	**2,414,000**
East Yorkshire	Hull Royal Infirmary	East Riding of Yorkshire PCT	325,000	
		Hull PCT	249,000	
		North Lincolnshire PCT	153,000	
		North East Lincolnshire PCT	159,000	
		North Yorkshire & York PCT (SE)	306,000	**1,192,000**
Teesside	James Cook Hospital, Middlesbrough	County Durham PCT (South)	248,500	
		Hartlepool PCT	90,000	
		Darlington PCT	99,000	
		Stockton-on-Tees PCT	186,000	
		Middlesbrough PCT	139,000	
		Redcar & Cleveland PCT	138,000	
		North Yorkshire & York PCT (North)	153,000	**1,053,500**

Northern	RVI, Newcastle	Cumbria PCT (North of Morecambe Bay)	320,000	
		County Durham PCT (North)	248,500	
		Northumberland Care Trust	311,000	
		Newcastle PCT	269,000	
		North Tyneside PCT	191,000	
		Gateshead PCT	191,000	
		South Tyneside PCT	151,000	
		Sunderland PCT	283,000	**1,964,500**
North Wales	N/A	Isle of Anglesey	68,592	
		Gwynedd	119,007	
		Conwy	110,863	
		Denbighshire	96,731	
		Flintshire	149,709	
		Wrexham	133,559	
		Powys (Northern Third)	43,771	**722,232**
		TOTAL	**50,814,232**	**50,814,232**

Appendix 3. Distance from each Major Trauma Centre to each SCI, and the travel time by road and by public transport, using a common departure time to enable fair comparison.



Stoke Mandeville Hospital

Distance in miles	
Oxford Radcliffe Hospital	24
St Mary's Hospital, Paddington	43
Royal London Hospital	47
Kings College Hospital	48
St George's Hospital, Tooting	60
Addenbrookes Hospital, Cambridge	69
University Hospital Coventry	71
Queen's Hospital, Birmingham	81
Southampton University Hospital	82
Royal Sussex Hospital, Brighton	95
Queens Medical Centre, Nottingham	100
Frenchay Hospital, Bristol	113
University Hospital of North Staffs, Stoke	132
Northern General Hospital, Sheffield	139
Leeds General Infirmary	169
Manchester	171
Liverpool	184
Hull Royal Infirmary	186
Preston	199
James Cook Hospital, Middlesborough	223
Derriford Hospital, Plymouth	237
RVI, Newcastle	255

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Oxford Radcliffe Hospital	00:49
St Mary's Hospital, Paddington	01:23
University Hospital Coventry	01:31
Royal London Hospital	01:37
Addenbrookes Hospital, Cambridge	01:37
St George's Hospital, Tooting	01:40
Queen's Hospital, Birmingham	01:52
Kings College Hospital	01:54
Southampton University Hospital	01:56
Queens Medical Centre, Nottingham	02:02
Frenchay Hospital, Bristol	02:06
Royal Sussex Hospital, Brighton	02:18
University Hospital of North Staffs, Stoke	02:37
Northern General Hospital, Sheffield	02:41
Leeds General Infirmary	03:04
Hull Royal Infirmary	03:22
Manchester	03:32
Liverpool	03:43
Preston	03:58
James Cook Hospital, Middlesborough	04:07
Derriford Hospital, Plymouth	04:26
RVI, Newcastle	04:42

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Oxford Radcliffe Hospital	01:31
St Mary's Hospital, Paddington	01:50
Royal London Hospital	01:56
Kings College Hospital	02:07
St George's Hospital, Tooting	02:32
Queen's Hospital, Birmingham	02:40
University Hospital Coventry	02:44
Addenbrookes Hospital, Cambridge	03:08
Royal Sussex Hospital, Brighton	03:18
Southampton University Hospital	03:50
Frenchay Hospital, Bristol	03:51
University Hospital of North Staffs, Stoke	03:57
Manchester	03:59
Liverpool	04:02
Northern General Hospital, Sheffield	04:05
Queens Medical Centre, Nottingham	04:07
Leeds General Infirmary	04:24
Preston	04:43
Hull Royal Infirmary	05:11
RVI, Newcastle	05:19
James Cook Hospital, Middlesborough	05:23
Derriford Hospital, Plymouth	06:13

Salisbury District Hospital

Distance in miles	
Southampton University Hospital	23
Frenchay Hospital, Bristol	64
Oxford Radcliffe Hospital	76
St George's Hospital, Tooting	88
St Mary's Hospital, Paddington	88
Royal Sussex Hospital, Brighton	91
Kings College Hospital	94
Royal London Hospital	100
Queen's Hospital, Birmingham	121
University Hospital Coventry	131
Addenbrookes Hospital, Cambridge	138
Derriford Hospital, Plymouth	143
University Hospital of North Staffs, Stoke	162
Queens Medical Centre, Nottingham	177
Northern General Hospital, Sheffield	217
Manchester	228
Preston	228
Liverpool	241
Leeds General Infirmary	246
Hull Royal Infirmary	263
James Cook Hospital, Middlesborough	301
RVI, Newcastle	333

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Southampton University Hospital	00:51
Oxford Radcliffe Hospital	01:39
Frenchay Hospital, Bristol	01:40
St George's Hospital, Tooting	02:07
St Mary's Hospital, Paddington	02:25
Kings College Hospital	02:32
University Hospital Coventry	02:37
Royal Sussex Hospital, Brighton	02:39
Queen's Hospital, Birmingham	02:46
Royal London Hospital	02:54
Addenbrookes Hospital, Cambridge	03:00
Derriford Hospital, Plymouth	03:16
Queens Medical Centre, Nottingham	03:27
University Hospital of North Staffs, Stoke	03:32
Northern General Hospital, Sheffield	04:04
Leeds General Infirmary	04:30
Manchester	04:33
Liverpool	04:44
Hull Royal Infirmary	04:48
Preston	04:58
James Cook Hospital, Middlesborough	05:33
RVI, Newcastle	06:10

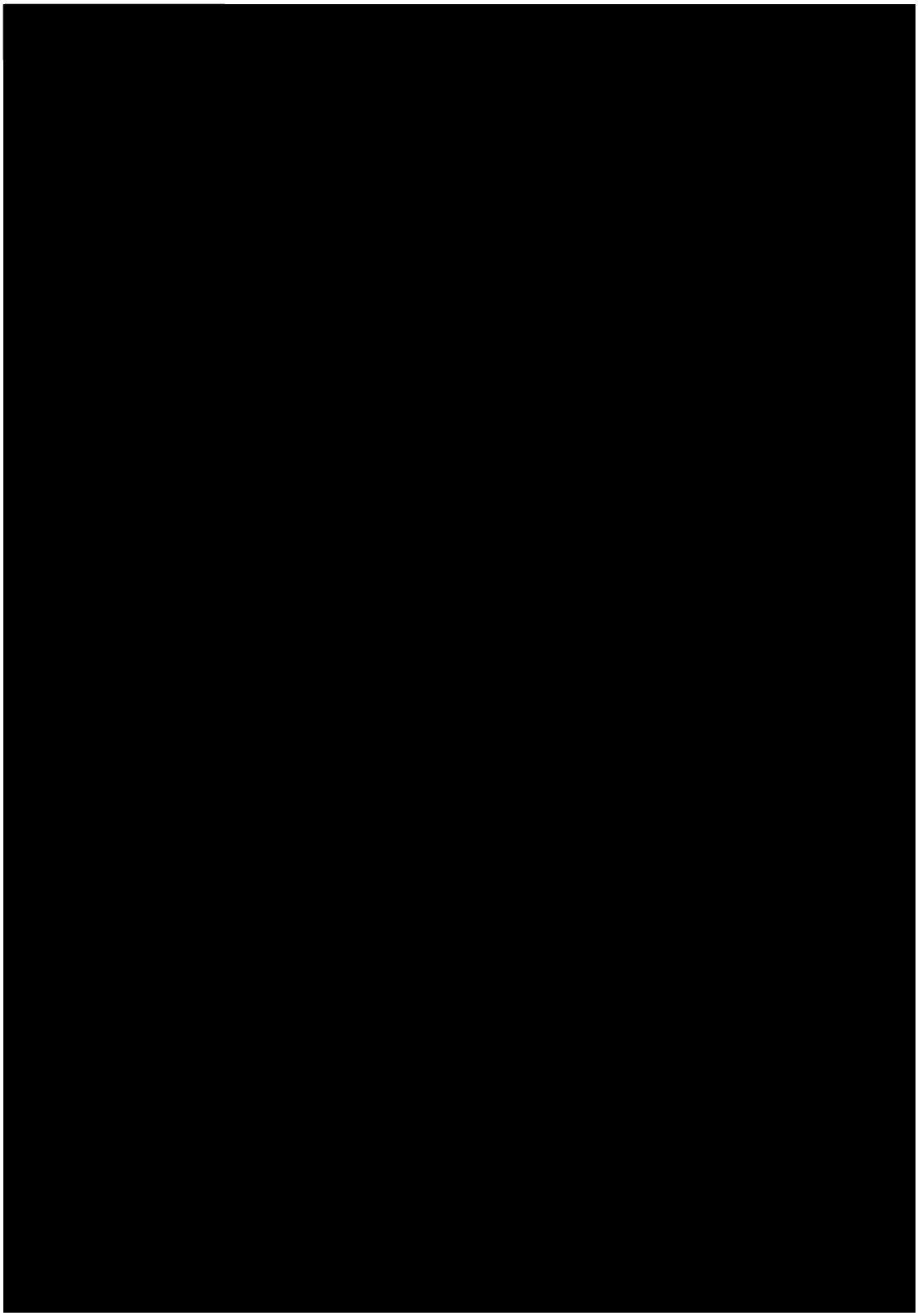
Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Southampton University Hospital	01:35
Kings College Hospital	02:32
St Mary's Hospital, Paddington	02:34
Royal London Hospital	02:36
St George's Hospital, Tooting	02:38
Frenchay Hospital, Bristol	02:49
Oxford Radcliffe Hospital	03:02
Royal Sussex Hospital, Brighton	03:34
Addenbrookes Hospital, Cambridge	03:59
Queen's Hospital, Birmingham	03:59
University Hospital Coventry	04:05
University Hospital of North Staffs, Stoke	04:27
Derriford Hospital, Plymouth	04:35
Queens Medical Centre, Nottingham	04:51
Leeds General Infirmary	05:06
Northern General Hospital, Sheffield	05:10
Liverpool	05:15
Manchester	05:21
Hull Royal Infirmary	06:06
Preston	06:11
RVI, Newcastle	06:21
James Cook Hospital, Middlesborough	06:37

Robert Jones & Agnes Hunt Hospital

Distance in miles	
University Hospital of North Staffs, Stoke	47
Liverpool	53
Manchester	64
Queen's Hospital, Birmingham	71
Preston	87
University Hospital Coventry	88
Northern General Hospital, Sheffield	103
Queens Medical Centre, Nottingham	107
Leeds General Infirmary	110
Oxford Radcliffe Hospital	139
Frenchay Hospital, Bristol	145
Hull Royal Infirmary	163
Addenbrookes Hospital, Cambridge	164
St Mary's Hospital, Paddington	177
Royal London Hospital	181
James Cook Hospital, Middlesborough	182
Kings College Hospital	186
Southampton University Hospital	205
St George's Hospital, Tooting	211
RVI, Newcastle	213
Derriford Hospital, Plymouth	245
Royal Sussex Hospital, Brighton	247

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Liverpool	01:10
University Hospital of North Staffs, Stoke	01:16
Manchester	01:20
Queen's Hospital, Birmingham	01:34
Preston	01:45
University Hospital Coventry	01:46
Leeds General Infirmary	02:07
Queens Medical Centre, Nottingham	02:15
Northern General Hospital, Sheffield	02:26
Oxford Radcliffe Hospital	02:45
Frenchay Hospital, Bristol	02:45
Hull Royal Infirmary	03:03
James Cook Hospital, Middlesborough	03:23
Addenbrookes Hospital, Cambridge	03:30
St Mary's Hospital, Paddington	03:45
RVI, Newcastle	03:56
Royal London Hospital	03:58
Southampton University Hospital	04:11
St George's Hospital, Tooting	04:15
Kings College Hospital	04:17
Royal Sussex Hospital, Brighton	04:53
Derriford Hospital, Plymouth	05:11

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Liverpool	02:08
Queen's Hospital, Birmingham	02:12
University Hospital of North Staffs, Stoke	02:27
Manchester	03:06
University Hospital Coventry	03:07
Frenchay Hospital, Bristol	03:30
Queens Medical Centre, Nottingham	03:33
Preston	03:33
Northern General Hospital, Sheffield	03:51
Leeds General Infirmary	03:57
St Mary's Hospital, Paddington	03:58
Royal London Hospital	04:02
Oxford Radcliffe Hospital	04:15
St George's Hospital, Tooting	04:21
Kings College Hospital	04:22
Royal Sussex Hospital, Brighton	05:16
Addenbrookes Hospital, Cambridge	05:21
Hull Royal Infirmary	05:28
Southampton University Hospital	05:33
RVI, Newcastle	05:56
James Cook Hospital, Middlesborough	06:00
Derriford Hospital, Plymouth	06:30



James Cook University Hospital, Middlesborough

Distance in miles	
James Cook Hospital, Middlesborough	0
RVI, Newcastle	43
Leeds General Infirmary	71
Northern General Hospital, Sheffield	97
Hull Royal Infirmary	110
Manchester	122
Queens Medical Centre, Nottingham	128
Liverpool	141
Preston	141
University Hospital of North Staffs, Stoke	162
University Hospital Coventry	172
Queen's Hospital, Birmingham	178
Addenbrookes Hospital, Cambridge	205
Oxford Radcliffe Hospital	255
St Mary's Hospital, Paddington	256
Royal London Hospital	259
Kings College Hospital	261
Frenchay Hospital, Bristol	267
St George's Hospital, Tooting	286
Southampton University Hospital	303
Royal Sussex Hospital, Brighton	322
Derriford Hospital, Plymouth	378

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
James Cook Hospital, Middlesborough	00:00
RVI, Newcastle	01:00
Leeds General Infirmary	01:22
Northern General Hospital, Sheffield	01:48
Hull Royal Infirmary	01:59
Manchester	02:17
Queens Medical Centre, Nottingham	02:21
Liverpool	02:39
University Hospital Coventry	03:00
University Hospital of North Staffs, Stoke	03:03
Queen's Hospital, Birmingham	03:18
Addenbrookes Hospital, Cambridge	03:56
Oxford Radcliffe Hospital	04:12
Frenchay Hospital, Bristol	04:34
St Mary's Hospital, Paddington	04:43
Preston	04:56
Royal London Hospital	04:58
St George's Hospital, Tooting	05:18
Kings College Hospital	05:19
Southampton University Hospital	05:32
Royal Sussex Hospital, Brighton	06:00
Derriford Hospital, Plymouth	07:15

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
James Cook Hospital, Middlesborough	00:00
RVI, Newcastle	02:03
Leeds General Infirmary	02:15
Manchester	03:09
Northern General Hospital, Sheffield	03:17
Hull Royal Infirmary	03:17
St Mary's Hospital, Paddington	03:57
Royal London Hospital	04:02
Kings College Hospital	04:09
Queens Medical Centre, Nottingham	04:09
Liverpool	04:22
St George's Hospital, Tooting	04:26
Queen's Hospital, Birmingham	04:27
University Hospital of North Staffs, Stoke	04:35
Addenbrookes Hospital, Cambridge	04:51
Preston	04:56
University Hospital Coventry	05:17
Royal Sussex Hospital, Brighton	05:21
Oxford Radcliffe Hospital	05:44
Frenchay Hospital, Bristol	05:51
Southampton University Hospital	06:08
Derriford Hospital, Plymouth	08:24

Pinderfields Hospital, Wakefield

Distance in miles		Journey Time by Road - Depart 10.30am Friday 17th Aug 2012		Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Leeds General Infirmary	13	Leeds General Infirmary	00:20	Leeds General Infirmary	00:45
Northern General Hospital, Sheffield	25	Northern General Hospital, Sheffield	00:37	Northern General Hospital, Sheffield	01:35
Hull Royal Infirmary	54	Hull Royal Infirmary	01:03	Manchester	02:01
Manchester	58	Manchester	01:12	Hull Royal Infirmary	02:16
Queens Medical Centre, Nottingham	63	Queens Medical Centre, Nottingham	01:14	Queens Medical Centre, Nottingham	02:22
James Cook Hospital, Middlesborough	75	James Cook Hospital, Middlesborough	01:24	Queen's Hospital, Birmingham	02:35
Liverpool	77	Preston	01:31	RVI, Newcastle	02:47
Preston	77	Liverpool	01:34	St Mary's Hospital, Paddington	02:50
University Hospital of North Staffs, Stoke	98	University Hospital Coventry	01:53	Royal London Hospital	02:52
University Hospital Coventry	107	University Hospital of North Staffs, Stoke	01:58	James Cook Hospital, Middlesborough	02:56
RVI, Newcastle	107	RVI, Newcastle	01:58	Liverpool	02:58
Queen's Hospital, Birmingham	114	Queen's Hospital, Birmingham	02:10	University Hospital of North Staffs, Stoke	03:05
Addenbrookes Hospital, Cambridge	149	Addenbrookes Hospital, Cambridge	03:02	St George's Hospital, Tooting	03:13
Oxford Radcliffe Hospital	161	Oxford Radcliffe Hospital	03:03	Addenbrookes Hospital, Cambridge	03:18
St Mary's Hospital, Paddington	184	Frenchay Hospital, Bristol	03:24	Kings College Hospital	03:23
Royal London Hospital	187	St Mary's Hospital, Paddington	03:34	Preston	03:23
Kings College Hospital	189	Royal London Hospital	03:48	University Hospital Coventry	03:29
Frenchay Hospital, Bristol	195	St George's Hospital, Tooting	04:08	Frenchay Hospital, Bristol	03:53
St George's Hospital, Tooting	214	Kings College Hospital	04:09	Royal Sussex Hospital, Brighton	04:19
Southampton University Hospital	231	Southampton University Hospital	04:43	Oxford Radcliffe Hospital	04:23
Royal Sussex Hospital, Brighton	250	Royal Sussex Hospital, Brighton	04:50	Southampton University Hospital	05:04
Derriford Hospital, Plymouth	313	Derriford Hospital, Plymouth	06:08	Derriford Hospital, Plymouth	06:38

Sheffield - Northern General Hospital

Distance in miles	
Northern General Hospital, Sheffield	0
Leeds General Infirmary	34
Manchester	39
Queens Medical Centre, Nottingham	44
Hull Royal Infirmary	65
Liverpool	79
Preston	80
University Hospital of North Staffs, Stoke	81
University Hospital Coventry	87
Queen's Hospital, Birmingham	93
James Cook Hospital, Middlesborough	96
RVI, Newcastle	128
Addenbrookes Hospital, Cambridge	130
Oxford Radcliffe Hospital	141
St Mary's Hospital, Paddington	164
Royal London Hospital	168
Kings College Hospital	169
Frenchay Hospital, Bristol	175
St George's Hospital, Tooting	195
Southampton University Hospital	211
Royal Sussex Hospital, Brighton	230
Derriford Hospital, Plymouth	294

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Northern General Hospital, Sheffield	00:00
Leeds General Infirmary	00:44
Queens Medical Centre, Nottingham	00:56
Hull Royal Infirmary	01:15
Manchester	01:18
University Hospital Coventry	01:35
James Cook Hospital, Middlesborough	01:48
University Hospital of North Staffs, Stoke	01:49
Queen's Hospital, Birmingham	01:50
Preston	01:53
Liverpool	01:55
RVI, Newcastle	02:22
Oxford Radcliffe Hospital	02:45
Addenbrookes Hospital, Cambridge	02:47
Frenchay Hospital, Bristol	03:06
St Mary's Hospital, Paddington	03:16
Royal London Hospital	03:30
St George's Hospital, Tooting	03:50
Kings College Hospital	03:51
Southampton University Hospital	04:05
Royal Sussex Hospital, Brighton	04:32
Derriford Hospital, Plymouth	05:50

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Northern General Hospital, Sheffield	00:00
Leeds General Infirmary	01:22
Manchester	01:46
Queens Medical Centre, Nottingham	02:01
Hull Royal Infirmary	02:08
Queen's Hospital, Birmingham	02:16
University Hospital of North Staffs, Stoke	02:30
Liverpool	02:33
RVI, Newcastle	02:41
University Hospital Coventry	03:02
James Cook Hospital, Middlesborough	03:09
Preston	03:10
St Mary's Hospital, Paddington	03:15
Frenchay Hospital, Bristol	03:35
Royal London Hospital	03:36
St George's Hospital, Tooting	03:38
Addenbrookes Hospital, Cambridge	03:40
Kings College Hospital	03:50
Oxford Radcliffe Hospital	03:51
Royal Sussex Hospital, Brighton	04:36
Southampton University Hospital	05:08
Derriford Hospital, Plymouth	06:04

This analysis has also been undertaken in reverse looking at the nearest SCI for each MTC as follows:

North East London & Essex **Royal London Hospital**

Distance in miles	
Royal National Orthopaedic Hospital	15
Stoke Mandeville Hospital	47
Salisbury District Hospital	100
Sheffield Royal Infirmary	168
Robert Jones & Agnes Hunt Hospital	181
Pinderfields Hospital, Wakefield	187
Southport & Formby Hospital	220
James Cook University Hospital, Middlesborough	259

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Royal National Orthopaedic Hospital	00:59
Stoke Mandeville Hospital	01:37
Salisbury District Hospital	02:54
Sheffield Royal Infirmary	03:30
Pinderfields Hospital, Wakefield	03:48
Robert Jones & Agnes Hunt Hospital	03:58
Southport & Formby Hospital	04:46
James Cook University Hospital, Middlesborough	04:58

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Royal National Orthopaedic Hospital	01:12
Stoke Mandeville Hospital	01:56
Salisbury District Hospital	02:36
Pinderfields Hospital, Wakefield	02:52
Sheffield Royal Infirmary	03:36
Robert Jones & Agnes Hunt Hospital	04:02
James Cook University Hospital, Middlesborough	04:02
Southport & Formby Hospital	04:04

South East London & Kent **Kings College Hospital**

Distance in miles	
Royal National Orthopaedic Hospital	17
Stoke Mandeville Hospital	48
Salisbury District Hospital	94
Sheffield Royal Infirmary	169
Robert Jones & Agnes Hunt Hospital	186
Pinderfields Hospital, Wakefield	189
Southport & Formby Hospital	222
James Cook University Hospital, Middlesborough	261

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Royal National Orthopaedic Hospital	01:18
Stoke Mandeville Hospital	01:54
Salisbury District Hospital	02:32
Sheffield Royal Infirmary	03:51
Pinderfields Hospital, Wakefield	04:09
Robert Jones & Agnes Hunt Hospital	04:17
Southport & Formby Hospital	05:08
James Cook University Hospital, Middlesborough	05:19

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Royal National Orthopaedic Hospital	01:18
Stoke Mandeville Hospital	02:07
Salisbury District Hospital	02:32
Pinderfields Hospital, Wakefield	03:23
Sheffield Royal Infirmary	03:50
James Cook University Hospital, Middlesborough	04:09
Southport & Formby Hospital	04:13
Robert Jones & Agnes Hunt Hospital	04:22

South West London & Surrey

St George's Hospital Tooting

Distance in miles	
Royal National Orthopaedic Hospital	20
Stoke Mandeville Hospital	60
Salisbury District Hospital	88
Sheffield Royal Infirmary	195
Robert Jones & Agnes Hunt Hospital	211
Pinderfields Hospital, Wakefield	214
Southport & Formby Hospital	247
James Cook University Hospital, Middlesborough	286

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Royal National Orthopaedic Hospital	01:31
Stoke Mandeville Hospital	01:40
Salisbury District Hospital	02:07
Sheffield Royal Infirmary	03:50
Pinderfields Hospital, Wakefield	04:08
Robert Jones & Agnes Hunt Hospital	04:15
Southport & Formby Hospital	05:07
James Cook University Hospital, Middlesborough	05:18

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Royal National Orthopaedic Hospital	01:37
Stoke Mandeville Hospital	02:32
Salisbury District Hospital	02:38
Pinderfields Hospital, Wakefield	03:13
Sheffield Royal Infirmary	03:38
Southport & Formby Hospital	04:19
Robert Jones & Agnes Hunt Hospital	04:21
James Cook University Hospital, Middlesborough	04:26

North West London

St Mary's Hospital Paddington

Distance in miles	
Royal National Orthopaedic Hospital	12
Stoke Mandeville Hospital	43
Salisbury District Hospital	88
Sheffield Royal Infirmary	164
Robert Jones & Agnes Hunt Hospital	177
Pinderfields Hospital, Wakefield	184
Southport & Formby Hospital	216
James Cook University Hospital, Middlesborough	256

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Royal National Orthopaedic Hospital	00:47
Stoke Mandeville Hospital	01:23
Salisbury District Hospital	02:25
Sheffield Royal Infirmary	03:16
Pinderfields Hospital, Wakefield	03:34
Robert Jones & Agnes Hunt Hospital	03:45
Southport & Formby Hospital	04:33
James Cook University Hospital, Middlesborough	04:43

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Royal National Orthopaedic Hospital	00:58
Stoke Mandeville Hospital	01:50
Salisbury District Hospital	02:34
Pinderfields Hospital, Wakefield	02:50
Sheffield Royal Infirmary	03:15
James Cook University Hospital, Middlesborough	03:57
Robert Jones & Agnes Hunt Hospital	03:58
Southport & Formby Hospital	04:01

Sussex **Royal Sussex County Hospital, Brighton**

Distance in miles	
Salisbury District Hospital	91
Royal National Orthopaedic Hospital	95
Stoke Mandeville Hospital	95
Sheffield Royal Infirmary	230
Robert Jones & Agnes Hunt Hospital	247
Pinderfields Hospital, Wakefield	250
Southport & Formby Hospital	285
James Cook University Hospital, Middlesborough	322

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Royal National Orthopaedic Hospital	02:10
Stoke Mandeville Hospital	02:18
Salisbury District Hospital	02:39
Sheffield Royal Infirmary	04:32
Pinderfields Hospital, Wakefield	04:50
Robert Jones & Agnes Hunt Hospital	04:53
Southport & Formby Hospital	05:47
James Cook University Hospital, Middlesborough	06:00

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Royal National Orthopaedic Hospital	02:27
Stoke Mandeville Hospital	03:18
Salisbury District Hospital	03:34
Pinderfields Hospital, Wakefield	04:19
Sheffield Royal Infirmary	04:36
Robert Jones & Agnes Hunt Hospital	05:16
James Cook University Hospital, Middlesborough	05:21
Southport & Formby Hospital	05:55

East of England **Addenbrookes Hospital Cambridge**

Distance in miles	
Royal National Orthopaedic Hospital	50
Stoke Mandeville Hospital	69
Sheffield Royal Infirmary	130
Salisbury District Hospital	138
Pinderfields Hospital, Wakefield	149
Robert Jones & Agnes Hunt Hospital	164
Southport & Formby Hospital	204
James Cook University Hospital, Middlesborough	205

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Royal National Orthopaedic Hospital	01:10
Stoke Mandeville Hospital	01:37
Sheffield Royal Infirmary	02:47
Salisbury District Hospital	03:00
Pinderfields Hospital, Wakefield	03:02
Robert Jones & Agnes Hunt Hospital	03:30
James Cook University Hospital, Middlesborough	03:56
Southport & Formby Hospital	04:20

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Royal National Orthopaedic Hospital	02:18
Stoke Mandeville Hospital	03:08
Pinderfields Hospital, Wakefield	03:18
Sheffield Royal Infirmary	03:40
Salisbury District Hospital	03:59
James Cook University Hospital, Middlesborough	04:51
Southport & Formby Hospital	05:06
Robert Jones & Agnes Hunt Hospital	05:21

Wessex **Southampton University Hospital**

Distance in miles	
Salisbury District Hospital	23
Stoke Mandeville Hospital	82
Royal National Orthopaedic Hospital	92
Robert Jones & Agnes Hunt Hospital	205
Sheffield Royal Infirmary	211
Pinderfields Hospital, Wakefield	231
Southport & Formby Hospital	243
James Cook University Hospital, Middlesborough	303

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Salisbury District Hospital	00:51
Royal National Orthopaedic Hospital	01:53
Stoke Mandeville Hospital	01:56
Sheffield Royal Infirmary	04:05
Robert Jones & Agnes Hunt Hospital	04:11
Pinderfields Hospital, Wakefield	04:43
Southport & Formby Hospital	05:03
James Cook University Hospital, Middlesborough	05:32

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Salisbury District Hospital	01:35
Royal National Orthopaedic Hospital	02:59
Stoke Mandeville Hospital	03:50
Pinderfields Hospital, Wakefield	05:04
Sheffield Royal Infirmary	05:08
Robert Jones & Agnes Hunt Hospital	05:33
James Cook University Hospital, Middlesborough	06:08
Southport & Formby Hospital	06:18

Thames Valley **Oxford Radcliffe Hospital**

Distance in miles	
Stoke Mandeville Hospital	24
Royal National Orthopaedic Hospital	53
Salisbury District Hospital	76
Robert Jones & Agnes Hunt Hospital	139
Sheffield Royal Infirmary	141
Pinderfields Hospital, Wakefield	161
Southport & Formby Hospital	179
James Cook University Hospital, Middlesborough	255

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Stoke Mandeville Hospital	00:49
Royal National Orthopaedic Hospital	01:13
Salisbury District Hospital	01:39
Robert Jones & Agnes Hunt Hospital	02:45
Sheffield Royal Infirmary	02:45
Pinderfields Hospital, Wakefield	03:03
Southport & Formby Hospital	03:32
James Cook University Hospital, Middlesborough	04:12

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Stoke Mandeville Hospital	01:31
Royal National Orthopaedic Hospital	02:13
Salisbury District Hospital	03:02
Sheffield Royal Infirmary	03:51
Robert Jones & Agnes Hunt Hospital	04:15
Pinderfields Hospital, Wakefield	04:23
Southport & Formby Hospital	05:02
James Cook University Hospital, Middlesborough	05:44

Avon **Frenchay Hospital, Bristol**

Distance in miles	
Salisbury District Hospital	64
Stoke Mandeville Hospital	113
Royal National Orthopaedic Hospital	127
Robert Jones & Agnes Hunt Hospital	145
Sheffield Royal Infirmary	175
Southport & Formby Hospital	183
Pinderfields Hospital, Wakefield	195
James Cook University Hospital, Middlesborough	267

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Salisbury District Hospital	01:40
Stoke Mandeville Hospital	02:06
Royal National Orthopaedic Hospital	02:13
Robert Jones & Agnes Hunt Hospital	02:45
Sheffield Royal Infirmary	03:06
Pinderfields Hospital, Wakefield	03:24
Southport & Formby Hospital	03:37
James Cook University Hospital, Middlesborough	04:34

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Salisbury District Hospital	02:49
Robert Jones & Agnes Hunt Hospital	03:30
Sheffield Royal Infirmary	03:35
Royal National Orthopaedic Hospital	03:36
Stoke Mandeville Hospital	03:51
Pinderfields Hospital, Wakefield	03:53
Southport & Formby Hospital	04:45
James Cook University Hospital, Middlesborough	05:51

South West Peninsula **Derriford Hospital, Plymouth**

Distance in miles	
Salisbury District Hospital	143
Stoke Mandeville	237
Royal National Orthopaedic Hospital	245
Robert Jones & Agnes Hunt Hospital	245
Sheffield Royal Infirmary	294
Southport & Formby Hospital	304
Pinderfields Hospital, Wakefield	313
James Cook University Hospital, Middlesborough	378

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Salisbury District Hospital	03:16
Stoke Mandeville	04:26
Royal National Orthopaedic Hospital	04:37
Robert Jones & Agnes Hunt Hospital	05:11
Sheffield Royal Infirmary	05:50
Pinderfields Hospital, Wakefield	06:08
Southport & Formby Hospital	06:21
James Cook University Hospital, Middlesborough	07:15

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Salisbury District Hospital	04:35
Royal National	05:27
Sheffield Royal Infirmary	06:04
Stoke Mandeville Hospital	06:13
Robert Jones & Agnes Hunt Hospital	06:30
Pinderfields Hospital, Wakefield	06:38
Southport & Formby Hospital	07:14
James Cook University Hospital, Middlesborough	08:24

West Midlands **Queen's Hospital, Birmingham**

Distance in miles	
Robert Jones & Agnes Hunt Hospital	71
Stoke Mandeville Hospital	81
Sheffield Royal Infirmary	93
Southport & Formby Hospital	109
Royal National Orthopaedic Hospital	110
Pinderfields Hospital, Wakefield	114
Salisbury District Hospital	121
James Cook University Hospital, Middlesborough	178

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Robert Jones & Agnes Hunt Hospital	01:34
Sheffield Royal Infirmary	01:50
Stoke Mandeville Hospital	01:52
Royal National Orthopaedic Hospital	02:00
Pinderfields Hospital, Wakefield	02:10
Southport & Formby Hospital	02:15
Salisbury District Hospital	02:46
James Cook University Hospital, Middlesborough	03:18

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Robert Jones & Agnes Hunt Hospital	02:12
Sheffield Royal Infirmary	02:16
Royal National Orthopaedic Hospital	02:32
Pinderfields Hospital, Wakefield	02:35
Stoke Mandeville Hospital	02:40
Southport & Formby Hospital	03:08
Salisbury District Hospital	03:59
James Cook University Hospital, Middlesborough	04:27

Arden **University Hospital, Coventry**

Distance in miles	
Stoke Mandeville Hospital	71
Royal National Orthopaedic Hospital	85
Sheffield Royal Infirmary	87
Robert Jones & Agnes Hunt Hospital	88
Pinderfields Hospital, Wakefield	107
Southport & Formby Hospital	128
Salisbury District Hospital	131
James Cook University Hospital, Middlesborough	172

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Royal National Orthopaedic Hospital	01:29
Stoke Mandeville Hospital	01:31
Sheffield Royal Infirmary	01:35
Robert Jones & Agnes Hunt Hospital	01:46
Pinderfields Hospital, Wakefield	01:53
Southport & Formby Hospital	02:26
Salisbury District Hospital	02:37
James Cook University Hospital, Middlesborough	03:00

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Royal National Orthopaedic Hospital	02:12
Stoke Mandeville Hospital	02:44
Sheffield Royal Infirmary	03:02
Robert Jones & Agnes Hunt Hospital	03:07
Pinderfields Hospital, Wakefield	03:29
Southport & Formby Hospital	03:53
Salisbury District Hospital	04:05
James Cook University Hospital, Middlesborough	05:17

Salop & Staffs **University Hospital of North Staffs, Stoke**

Distance in miles	
Robert Jones & Agnes Hunt Hospital	47
Southport & Formby Hospital	64
Sheffield Royal Infirmary	81
Pinderfields Hospital, Wakefield	98
Stoke Mandeville Hospital	132
Royal National Orthopaedic Hospital	148
Salisbury District Hospital	162
James Cook University Hospital, Middlesborough	162

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Robert Jones & Agnes Hunt Hospital	01:16
Southport & Formby Hospital	01:24
Sheffield Royal Infirmary	01:49
Pinderfields Hospital, Wakefield	01:58
Stoke Mandeville Hospital	02:37
Royal National Orthopaedic Hospital	02:38
James Cook University Hospital, Middlesborough	03:03
Salisbury District Hospital	03:32

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Robert Jones & Agnes Hunt Hospital	02:27
Sheffield Royal Infirmary	02:30
Royal National Orthopaedic Hospital	02:56
Southport & Formby Hospital	03:00
Pinderfields Hospital, Wakefield	03:05
Stoke Mandeville Hospital	03:57
Salisbury District Hospital	04:27
James Cook University Hospital, Middlesborough	04:35

East Midlands **Queen's Medical Centre, Nottingham**

Distance in miles	
Sheffield Royal Infirmary	44
Pinderfields Hospital, Wakefield	63
Stoke Mandeville Hospital	100
Robert Jones & Agnes Hunt Hospital	107
Royal National Orthopaedic Hospital	115
Southport & Formby Hospital	115
James Cook University Hospital, Middlesborough	128
Salisbury District Hospital	177

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Sheffield Royal Infirmary	00:56
Pinderfields Hospital, Wakefield	01:14
Stoke Mandeville Hospital	02:02
Royal National Orthopaedic Hospital	02:03
Robert Jones & Agnes Hunt Hospital	02:15
James Cook University Hospital, Middlesborough	02:21
Southport & Formby Hospital	02:33
Salisbury District Hospital	03:27

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Sheffield Royal Infirmary	02:01
Pinderfields Hospital, Wakefield	02:22
Royal National Orthopaedic Hospital	03:04
Robert Jones & Agnes Hunt Hospital	03:33
Stoke Mandeville Hospital	04:07
James Cook University Hospital, Middlesborough	04:09
Southport & Formby Hospital	04:14
Salisbury District Hospital	04:51

Merseyside **Liverpool**

Distance in miles	
Southport & Formby Hospital	19
Robert Jones & Agnes Hunt Hospital	53
Pinderfields Hospital, Wakefield	77
Sheffield Royal Infirmary	79
James Cook University Hospital, Middlesborough	141
Stoke Mandeville Hospital	184
Royal National Orthopaedic Hospital	200
Salisbury District Hospital	241

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Southport & Formby Hospital	00:46
Robert Jones & Agnes Hunt Hospital	01:10
Pinderfields Hospital, Wakefield	01:34
Sheffield Royal Infirmary	01:55
James Cook University Hospital, Middlesborough	02:39
Stoke Mandeville Hospital	03:43
Royal National Orthopaedic Hospital	03:44
Salisbury District Hospital	04:44

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Southport & Formby Hospital	01:30
Robert Jones & Agnes Hunt Hospital	02:08
Sheffield Royal Infirmary	02:33
Pinderfields Hospital, Wakefield	02:58
Royal National Orthopaedic Hospital	03:25
Stoke Mandeville Hospital	04:02
James Cook University Hospital, Middlesborough	04:22
Salisbury District Hospital	05:15

Greater Manchester **Manchester**

Distance in miles	
Sheffield Royal Infirmary	39
Southport & Formby Hospital	42
Pinderfields Hospital, Wakefield	58
Robert Jones & Agnes Hunt Hospital	64
James Cook University Hospital, Middlesborough	122
Stoke Mandeville Hospital	171
Royal National Orthopaedic Hospital	187
Salisbury District Hospital	228

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Southport & Formby Hospital	01:03
Pinderfields Hospital, Wakefield	01:12
Sheffield Royal Infirmary	01:18
Robert Jones & Agnes Hunt Hospital	01:20
James Cook University Hospital, Middlesborough	02:17
Stoke Mandeville Hospital	03:32
Royal National Orthopaedic Hospital	03:33
Salisbury District Hospital	04:33

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Sheffield Royal Infirmary	01:46
Southport & Formby Hospital	01:50
Pinderfields Hospital, Wakefield	02:01
Robert Jones & Agnes Hunt Hospital	03:06
James Cook University Hospital, Middlesborough	03:09
Royal National Orthopaedic Hospital	03:28
Stoke Mandeville Hospital	03:59
Salisbury District Hospital	05:21

Lancashire **Preston**

Distance in miles	
Southport & Formby Hospital	22
Pinderfields Hospital, Wakefield	77
Sheffield Royal Infirmary	80
Robert Jones & Agnes Hunt Hospital	87
James Cook University Hospital, Middlesborough	141
Stoke Mandeville Hospital	199
Royal National Orthopaedic Hospital	214
Salisbury District Hospital	228

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Southport & Formby Hospital	00:48
Pinderfields Hospital, Wakefield	01:31
Robert Jones & Agnes Hunt Hospital	01:45
Sheffield Royal Infirmary	01:53
Stoke Mandeville Hospital	03:58
Royal National Orthopaedic Hospital	03:59
James Cook University Hospital, Middlesborough	04:56
Salisbury District Hospital	04:58

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Southport & Formby Hospital	01:37
Sheffield Royal Infirmary	03:10
Pinderfields Hospital, Wakefield	03:23
Robert Jones & Agnes Hunt Hospital	03:33
Royal National Orthopaedic Hospital	03:40
Stoke Mandeville Hospital	04:43
James Cook University Hospital, Middlesborough	04:56
Salisbury District Hospital	06:11

South Yorkshire **Northern General Hospital, Sheffield**

Distance in miles	
Sheffield Royal Infirmary	0
Pinderfields Hospital, Wakefield	25
James Cook University Hospital, Middlesborough	97
Robert Jones & Agnes Hunt Hospital	103
Southport & Formby Hospital	104
Stoke Mandeville Hospital	139
Royal National Orthopaedic Hospital	155
Salisbury District Hospital	217

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Sheffield Royal Infirmary	00:00
Pinderfields Hospital, Wakefield	00:37
James Cook University Hospital, Middlesborough	01:48
Southport & Formby Hospital	02:12
Robert Jones & Agnes Hunt Hospital	02:26
Royal National Orthopaedic Hospital	02:41
Stoke Mandeville Hospital	02:41
Salisbury District Hospital	04:04

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Sheffield Royal Infirmary	00:00
Pinderfields Hospital, Wakefield	01:35
James Cook University Hospital, Middlesborough	03:17
Southport & Formby Hospital	03:24
Robert Jones & Agnes Hunt Hospital	03:51
Royal National Orthopaedic Hospital	03:57
Stoke Mandeville Hospital	04:05
Salisbury District Hospital	05:10

West Yorkshire **Leeds General Infirmary**

Distance in miles	
Pinderfields Hospital, Wakefield	13
Sheffield Royal Infirmary	34
James Cook University Hospital, Middlesborough	71
Southport & Formby Hospital	76
Robert Jones & Agnes Hunt Hospital	110
Stoke Mandeville Hospital	169
Royal National Orthopaedic Hospital	184
Salisbury District Hospital	246

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Pinderfields Hospital, Wakefield	00:20
Sheffield Royal Infirmary	00:44
James Cook University Hospital, Middlesborough	01:22
Southport & Formby Hospital	01:39
Robert Jones & Agnes Hunt Hospital	02:07
Royal National Orthopaedic Hospital	03:04
Stoke Mandeville Hospital	03:04
Salisbury District Hospital	04:30

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Pinderfields Hospital, Wakefield	00:45
Sheffield Royal Infirmary	01:22
James Cook University Hospital, Middlesborough	02:15
Southport & Formby Hospital	03:01
Royal National Orthopaedic Hospital	03:28
Robert Jones & Agnes Hunt Hospital	03:57
Stoke Mandeville Hospital	04:24
Salisbury District Hospital	05:06

East Yorkshire **Hull Royal Infirmary**

Distance in miles	
Pinderfields Hospital, Wakefield	54
Sheffield Royal Infirmary	65
James Cook University Hospital, Middlesborough	110
Southport & Formby Hospital	129
Robert Jones & Agnes Hunt Hospital	163
Stoke Mandeville Hospital	186
Royal National Orthopaedic Hospital	202
Salisbury District Hospital	263

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
Pinderfields Hospital, Wakefield	01:03
Sheffield Royal Infirmary	01:15
James Cook University Hospital, Middlesborough	01:59
Southport & Formby Hospital	02:36
Robert Jones & Agnes Hunt Hospital	03:03
Stoke Mandeville Hospital	03:22
Royal National Orthopaedic Hospital	03:23
Salisbury District Hospital	04:48

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
Sheffield Royal Infirmary	02:08
Pinderfields Hospital, Wakefield	02:16
James Cook University Hospital, Middlesborough	03:17
Royal National Orthopaedic Hospital	04:00
Southport & Formby Hospital	04:12
Stoke Mandeville Hospital	05:11
Robert Jones & Agnes Hunt Hospital	05:28
Salisbury District Hospital	06:06

Teeside **James Cook Hospital, Middlesbrough**

Distance in miles	
James Cook University Hospital, Middlesborough	0
Pinderfields Hospital, Wakefield	75
Sheffield Royal Infirmary	96
Southport & Formby Hospital	145
Robert Jones & Agnes Hunt Hospital	182
Stoke Mandeville Hospital	223
Royal National Orthopaedic Hospital	239
Salisbury District Hospital	301

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
James Cook University Hospital, Middlesborough	00:00
Pinderfields Hospital, Wakefield	01:24
Sheffield Royal Infirmary	01:48
Southport & Formby Hospital	02:55
Robert Jones & Agnes Hunt Hospital	03:23
Stoke Mandeville Hospital	04:07
Royal National Orthopaedic Hospital	04:08
Salisbury District Hospital	05:33

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
James Cook University Hospital, Middlesborough	00:00
Pinderfields Hospital, Wakefield	02:56
Sheffield Royal Infirmary	03:09
Southport & Formby Hospital	04:56
Royal National Orthopaedic Hospital	05:01
Stoke Mandeville Hospital	05:23
Robert Jones & Agnes Hunt Hospital	06:00
Salisbury District Hospital	06:37

Northern **RVI, Newcastle**

Distance in miles	
James Cook University Hospital, Middlesborough	43
Pinderfields Hospital, Wakefield	107
Sheffield Royal Infirmary	128
Southport & Formby Hospital	152
Robert Jones & Agnes Hunt Hospital	213
Stoke Mandeville Hospital	255
Royal National Orthopaedic Hospital	271
Salisbury District Hospital	333

Journey Time by Road - Depart 10.30am Friday 17th Aug 2012	
James Cook University Hospital, Middlesborough	01:00
Pinderfields Hospital, Wakefield	01:58
Sheffield Royal Infirmary	02:22
Southport & Formby Hospital	03:25
Robert Jones & Agnes Hunt Hospital	03:56
Stoke Mandeville Hospital	04:42
Royal National Orthopaedic Hospital	04:43
Salisbury District Hospital	06:10

Journey Time by Public Transport - first departure after 10.30am on Friday 17th August 2012	
James Cook University Hospital, Middlesborough	02:03
Sheffield Royal Infirmary	02:41
Pinderfields Hospital, Wakefield	02:47
Royal National Orthopaedic Hospital	04:23
Southport & Formby Hospital	04:34
Stoke Mandeville Hospital	05:19
Robert Jones & Agnes Hunt Hospital	05:56
Salisbury District Hospital	06:21

Appendix 4 Initial Options

Option:	Title	Methodology
1	Existing Referral Relationships	Populated using Analysis 1 looking at capacity implications of mapping health economies to SCI centres on the basis of existing relationships held by the MTC (as the prime relationship for a geographical footprint).
2	Nearest Distance	Populated using nearest SCI for each MTC as identified in Analysis 4.
3	Fastest Road Journey	Populated using shortest journey by road to an SCI for each MTC as identified in Analysis 4.
4	Fastest Public Transport Journey	Populated using shortest journey by public transport to an SCI for each MTC as identified in Analysis 4.
5	Nearest Distance to an SCI Centre with available capacity	Populated by allocating units physically within the footprint of a trauma system to that SCI, then using nearest SCI for each MTC as identified in Analysis 4 allocating the nearest first. At the point where the SCI reaches optimal capacity further MTCs will be allocated to the next SCI with capacity.
6	Fastest Road Journey to an SCI Centre with available capacity	Populated by allocating units physically within the footprint of a trauma system to that SCI, then using shortest journey by road to an SCI for each MTC as identified in Analysis 4 allocating the nearest first. At the point where the SCI reaches optimal capacity further MTCs will be allocated to the next SCI with capacity.
7	Fastest Public Transport Journey to an SCI Centre with available capacity	Populated by allocating units physically within the footprint of a trauma system to that SCI, then using shortest journey by public transport to an SCI for each MTC as identified in Analysis 4 allocating the nearest first. At the point where the SCI reaches optimal capacity further MTCs will be allocated to the next SCI with capacity.
8	Optimal Bed Utilisation	Populated minimising the difference percentage coverage for all centres vs. the target percentage coverage taking account of SCIs that are physically situated within the footprint of a trauma system.

	Option 1				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Existing.												
	NB figures for London and Sussex			% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
	are NOT known			Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**RNOH**	3,125,000								
3	South West London & Surrey	2,376,000	4.68%	**RNOH**	2,376,000								
4	North West London	2,361,000	4.65%	**RNOH**	2,361,000								
5	Sussex	1,510,000	2.97%	**Stoke M**		1,510,000							
6	East of England	4,256,000	8.38%	**Stoke M**		4,256,000							
8	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
9	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
10	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
11	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
12	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
13	Arden	2,019,750	3.97%	**RJAH**				2,019,750					
14	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
15	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
16	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
17	Greater Manchester	2,918,000	5.74%	**Southport**					2,918,000				
18	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
19	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
20	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
21	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
22	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
23	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
24	*North Wales*	722,232	1.42%	**RJAH**				722,232					
		50,814,232	100.00%	**TOTAL**	11,329,000	7,673,000	6,846,000	7,022,232	6,441,000	3,018,000	3,606,000	4,879,000	50,814,232
				% Population	22.3%	15.1%	13.5%	13.8%	12.7%	5.9%	7.1%	9.6%	100.0%
				Difference Popn	7,289,920	- 6,659,219	1,373,698	1,289,344	838,405	- 109,030	- 563,373	- 3,459,746	
				Difference %	14.3%	-13.1%	2.7%	2.5%	1.6%	-0.2%	-1.1%	-6.8%	
				Beds Per Million	2.7	14.3	6.1	6.3	6.7	8.0	8.9	13.1	7.7
				Bed variation	-55.95	51.11	-10.54	-9.90	-6.43	0.84	4.32	26.55	

	Option 2				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Distance												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**RNOH**	3,125,000								
3	South West London & Surrey	2,376,000	4.68%	**RNOH**	2,376,000								
4	North West London	2,361,000	4.65%	**RNOH**	2,361,000								
5	Sussex	1,510,000	2.97%	**Salisbury**			1,510,000						
6	East of England	4,256,000	8.38%	**RNOH**	4,256,000								
8	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
9	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
10	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
11	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
12	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
13	Arden	2,019,750	3.97%	**Stoke M**		2,019,750							
14	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
15	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
16	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
17	Greater Manchester	2,918,000	5.74%	**Sheffield**								2,918,000	
18	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
19	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
20	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
21	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
22	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
23	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
24	*North Wales*	722,232	1.42%	**RJAH**				722,232					
		50,814,232	100.00%	**TOTAL**	15,585,000	3,926,750	8,356,000	5,002,482	3,523,000	3,018,000	3,606,000	7,797,000	50,814,232
				% Population	30.7%	7.7%	16.4%	9.8%	6.9%	5.9%	7.1%	15.3%	100.0%
				Difference Popn	11,545,920	- 10,405,469	2,883,698	- 730,406	- 2,079,595	- 109,030	- 563,373	- 541,746	
				Difference %	22.7%	-20.5%	5.7%	-1.4%	-4.1%	-0.2%	-1.1%	-1.1%	
				Beds Per Million	2.0	28.0	5.0	8.8	12.2	8.0	8.9	8.2	7.7
				Bed variation	-88.62	79.86	-22.13	5.61	15.96	0.84	4.32	4.16	

	Option 3				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Road trans time												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**RNOH**	3,125,000								
3	South West London & Surrey	2,376,000	4.68%	**RNOH**	2,376,000								
4	North West London	2,361,000	4.65%	**RNOH**	2,361,000								
5	Sussex	1,510,000	2.97%	**RNOH**	1,510,000								
6	East of England	4,256,000	8.38%	**RNOH**	4,256,000								
8	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
9	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
10	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
11	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
12	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
13	Arden	2,019,750	3.97%	**RNOH**	2,019,750								
14	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
15	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
16	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
17	Greater Manchester	2,918,000	5.74%	**Southport**					2,918,000				
18	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
19	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
20	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
21	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
22	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
23	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
24	*North Wales*	722,232	1.42%	**RJAH**				722,232					
		50,814,232	100.00%	**TOTAL**	19,114,750	1,907,000	6,846,000	5,002,482	6,441,000	3,018,000	3,606,000	4,879,000	50,814,232
				% Population	37.6%	3.8%	13.5%	9.8%	12.7%	5.9%	7.1%	9.6%	100.0%
				Difference Popn	15,075,670	- 12,425,219	1,373,698	- 730,406	838,405	- 109,030	- 563,373	- 3,459,746	
				Difference %	29.7%	-24.5%	2.7%	-1.4%	1.6%	-0.2%	-1.1%	-6.8%	
				Beds Per Million	1.6	57.7	6.1	8.8	6.7	8.0	8.9	13.1	7.7
				Bed variation	-115.71	95.36	-10.54	5.61	-6.43	0.84	4.32	26.55	

	Option 4				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Public trans time												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**RNOH**	3,125,000								
3	South West London & Surrey	2,376,000	4.68%	**RNOH**	2,376,000								
4	North West London	2,361,000	4.65%	**RNOH**	2,361,000								
5	Sussex	1,510,000	2.97%	**RNOH**	1,510,000								
6	East of England	4,256,000	8.38%	**RNOH**	4,256,000								
8	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
9	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
10	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
11	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
12	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
13	Arden	2,019,750	3.97%	**RNOH**	2,019,750								
14	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
15	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
16	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
17	Greater Manchester	2,918,000	5.74%	**Sheffield**								2,918,000	
18	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
19	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
20	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
21	East Yorkshire	1,192,000	2.35%	**Sheffield**								1,192,000	
22	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
23	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
24	*North Wales*	722,232	1.42%	**RJAH**				722,232					
		50,814,232	100.00%	**TOTAL**	19,114,750	1,907,000	6,846,000	5,002,482	3,523,000	3,018,000	2,414,000	8,989,000	50,814,232
				% Population	37.6%	3.8%	13.5%	9.8%	6.9%	5.9%	4.8%	17.7%	100.0%
				Difference Popn	15,075,670	- 12,425,219	1,373,698	- 730,406	- 2,079,595	- 109,030	- 1,755,373	650,254	
				Difference %	29.7%	-24.5%	2.7%	-1.4%	-4.1%	-0.2%	-3.5%	1.3%	
				Beds Per Million	1.6	57.7	6.1	8.8	12.2	8.0	13.3	7.1	7.7
				Bed variation	-115.71	95.36	-10.54	5.61	15.96	0.84	13.47	-4.99	

	Option 5				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Distance to capacity												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**Stoke M**		3,125,000							
3	South West London & Surrey	2,376,000	4.68%	**Stoke M**		2,376,000							
4	North West London	2,361,000	4.65%	**Stoke M**		2,361,000							
5	Sussex	1,510,000	2.97%	**RNOH**	1,510,000								
6	East of England	4,256,000	8.38%	**Stoke M**		4,256,000							
8	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
9	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
10	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
11	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
12	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
13	Arden	2,019,750	3.97%	**RJAH**				2,019,750					
14	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
15	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
16	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
17	Greater Manchester	2,918,000	5.74%	**Sheffield**								2,918,000	
18	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
19	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
20	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
21	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
22	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
23	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
24	*North Wales*	722,232	1.42%	**Southport**					722,232				
		50,814,232	100.00%	**TOTAL**	4,977,000	14,025,000	6,846,000	6,300,000	4,245,232	3,018,000	3,606,000	7,797,000	50,814,232
				% Population	9.8%	27.6%	13.5%	12.4%	8.4%	5.9%	7.1%	15.3%	100.0%
				Difference Popn	937,920	- 307,219	1,373,698	567,112	- 1,357,363	- 109,030	- 563,373	- 541,746	
				Difference %	1.8%	-0.6%	2.7%	1.1%	-2.7%	-0.2%	-1.1%	-1.1%	
				Beds Per Million	6.2	7.8	6.1	7.0	10.1	8.0	8.9	8.2	7.7
				Bed variation	-7.20	2.36	-10.54	-4.35	10.42	0.84	4.32	4.16	

	Option 6				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Road trans to capacity												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**Stoke M**		3,125,000							
3	South West London & Surrey	2,376,000	4.68%	**Stoke M**		2,376,000							
4	North West London	2,361,000	4.65%	**Stoke M**		2,361,000							
5	Sussex	1,510,000	2.97%	**RNOH**	1,510,000								
6	East of England	4,256,000	8.38%	**Stoke M**		4,256,000							
8	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
9	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
10	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
11	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
12	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
13	Arden	2,019,750	3.97%	**Sheffield**								2,019,750	
14	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
15	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
16	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
17	Greater Manchester	2,918,000	5.74%	**Southport**					2,918,000				
18	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
19	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
20	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
21	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
22	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
23	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
24	*North Wales*	722,232	1.42%	**RJAH**				722,232					
		50,814,232	100.00%	**TOTAL**	4,977,000	14,025,000	6,846,000	5,002,482	6,441,000	3,018,000	3,606,000	6,898,750	50,814,232
				% Population	9.8%	27.6%	13.5%	9.8%	12.7%	5.9%	7.1%	13.6%	100.0%
				Difference Popn	937,920	-307,219	1,373,698	-730,406	838,405	-109,030	-563,373	-1,439,996	
				Difference %	1.8%	-0.6%	2.7%	-1.4%	1.6%	-0.2%	-1.1%	-2.8%	
				Beds Per Million	6.2	7.8	6.1	8.8	6.7	8.0	8.9	9.3	7.7
				Bed variation	-7.20	2.36	-10.54	5.61	-6.43	0.84	4.32	11.05	

	Option 7				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Public trans to capacity												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**Stoke M**		3,125,000							
3	South West London & Surrey	2,376,000	4.68%	**Stoke M**		2,376,000							
4	North West London	2,361,000	4.65%	**Stoke M**		2,361,000							
5	Sussex	1,510,000	2.97%	**Salisbury**			1,510,000						
6	East of England	4,256,000	8.38%	**Stoke M**		4,256,000							
8	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
9	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
10	Avon	2,725,000	5.36%	**RJAH**				2,725,000					
11	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
12	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
13	Arden	2,019,750	3.97%	**Stoke M**		2,019,750							
14	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
15	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
16	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
17	Greater Manchester	2,918,000	5.74%	**Sheffield**								2,918,000	
18	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
19	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
20	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
21	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
22	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
23	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
24	*North Wales*	722,232	1.42%	**Southport**					722,232				
		50,814,232	100.00%	**TOTAL**	3,467,000	16,044,750	5,631,000	7,005,250	4,245,232	3,018,000	3,606,000	7,797,000	50,814,232
				% Population	6.8%	31.6%	11.1%	13.8%	8.4%	5.9%	7.1%	15.3%	100.0%
				Difference Popn	- 572,080	1,712,531	158,698	1,272,362	- 1,357,363	- 109,030	- 563,373	- 541,746	
				Difference %	-1.1%	3.4%	0.3%	2.5%	-2.7%	-0.2%	-1.1%	-1.1%	
				Beds Per Million	8.9	6.9	7.5	6.3	10.1	8.0	8.9	8.2	7.7
				Bed variation	4.39	-13.14	-1.22	-9.77	10.42	0.84	4.32	4.16	

	Option 8				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Optimal Capacity												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**Stoke M**		3,125,000							
3	South West London & Surrey	2,376,000	4.68%	**Stoke M**		2,376,000							
4	North West London	2,361,000	4.65%	**Stoke M**		2,361,000							
5	Sussex	1,510,000	2.97%	**Stoke M**		1,510,000							
6	East of England	4,256,000	8.38%	**Sheffield**								4,256,000	
8	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
9	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
10	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
11	South West Peninsula	1,619,000	3.19%	**Stoke M**		1,619,000							
12	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
13	Arden	2,019,750	3.97%	**Stoke M**		2,019,750							
14	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
15	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
16	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
17	Greater Manchester	2,918,000	5.74%	**Southport**					2,918,000				
18	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
19	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
20	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
21	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
22	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
23	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
24	*North Wales*	722,232	1.42%	**RJAH**				722,232					
		50,814,232	100.00%	**TOTAL**	3,467,000	14,917,750	5,227,000	5,002,482	6,441,000	3,018,000	3,606,000	9,135,000	50,814,232
				% Population	6.8%	29.4%	10.3%	9.8%	12.7%	5.9%	7.1%	18.0%	100.0%
				Difference Popn	- 572,080	585,531	- 245,302	- 730,406	838,405	- 109,030	- 563,373	796,254	
				Difference %	-1.1%	1.2%	-0.5%	-1.4%	1.6%	-0.2%	-1.1%	1.6%	
				Beds Per Million	8.9	7.4	8.0	8.8	6.7	8.0	8.9	7.0	7.7
				Bed variation	4.39	-4.49	1.88	5.61	-6.43	0.84	4.32	-6.11	

	Option 10				RNOH	Stoke M	Salisbury	RJAH	Southport	Middlesbro	Pinderfields	Sheffield	Total
				Bed Count	31	110	42	44	43	24	32	64	390
	Trauma Centres London												
				% of National Beds	7.9%	28.2%	10.8%	11.3%	11.0%	6.2%	8.2%	16.4%	100.0%
				Target Popn Share	4,039,080	14,332,219	5,472,302	5,732,888	5,602,595	3,127,030	4,169,373	8,338,746	50,814,232
	Trauma Network	**Catchment**	**% Share**	**Allocated SCIC**	**RNOH**	**Stoke M**	**Salisbury**	**RJAH**	**Southport**	**Middlesbro**	**Pinderfields**	**Sheffield**	
1	North East London & Essex	3,467,000	6.82%	**RNOH**	3,467,000								
2	South East London & Kent	3,125,000	6.15%	**Stoke M**	3,125,000								
3	South West London & Surrey	2,376,000	4.68%	**RNOH**		2,376,000							
4	North West London	2,361,000	4.65%	**Stoke M**		2,361,000							
5	Sussex	1,510,000	2.97%	**Stoke M**		1,510,000							
6	East of England (North)	1,900,000	3.74%	**Sheffield**								1,900,000	
	East of England (South)	2,356,000	4.64%	**Stoke M**		2,356,000							
7	Wessex	2,502,000	4.92%	**Salisbury**			2,502,000						
8	Thames Valley	1,907,000	3.75%	**Stoke M**		1,907,000							
9	Avon	2,725,000	5.36%	**Salisbury**			2,725,000						
10	South West Peninsula	1,619,000	3.19%	**Salisbury**			1,619,000						
11	West Midlands	2,774,480	5.46%	**RJAH**				2,774,480					
12	Arden (West)	1,151,750	2.27%	**RJAH**				1,151,750					
	Arden (South)	868,000	1.71%	**Stoke M**		868,000							
13	Salop & Staffs	1,505,770	2.96%	**RJAH**				1,505,770					
14	East Midlands	3,119,000	6.14%	**Sheffield**								3,119,000	
15	Merseyside	2,012,000	3.96%	**Southport**					2,012,000				
16	Greater Manchester	2,918,000	5.74%	**Southport**					2,918,000				
17	Lancashire	1,511,000	2.97%	**Southport**					1,511,000				
18	South Yorkshire	1,760,000	3.46%	**Sheffield**								1,760,000	
19	West Yorkshire	2,414,000	4.75%	**Pinderfields**							2,414,000		
20	East Yorkshire	1,192,000	2.35%	**Pinderfields**							1,192,000		
21	Teesside	1,053,500	2.07%	**Middlesbro**						1,053,500			
22	Northern	1,964,500	3.87%	**Middlesbro**						1,964,500			
23	*North Wales*	722,232	1.42%	**RJAH**				722,232					
		50,814,232	100.00%	**TOTAL**	6,592,000	11,378,000	6,846,000	6,154,232	6,441,000	3,018,000	3,606,000	6,779,000	50,814,232
				% Population	13.0%	22.4%	13.5%	12.1%	12.7%	5.9%	7.1%	13.3%	100.0%
				Difference Popn	2,552,920	- 2,954,219	1,373,698	421,344	838,405	- 109,030	- 563,373	- 1,559,746	
				Difference %	5.0%	-5.8%	2.7%	0.8%	1.6%	-0.2%	-1.1%	-3.1%	
				Beds Per Million	4.7	9.7	6.1	7.1	6.7	8.0	8.9	9.4	7.7
				Variation from average	-19.59	22.67	-10.54	-3.23	-6.43	0.84	4.32	11.97	

Appendix 5: Impact Assessment for each option

OPTION 1

Strengths	This option reflects the current referral patterns for all 22 Major Trauma centres in England, and would therefore reflect the least change in relation preferred referral patterns.	
Weaknesses	This option identifies significant variation between the number of available beds and an equitable share of beds as follows: 56 too few beds at RNOH 51 too many beds at Stoke Mandeville 11 too few beds at Salisbury 10 too few beds at RJAH 6 too few beds at Southport 27 too many beds at Sheffield	
Impact on patients from Area		
NE London & Essex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SE London & Kent	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW London & Surrey	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
NW London	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Sussex	Patients are referred to the second nearest centre, and the centre with the second shortest road and public travel time	
East of England	Patients are referred to the second nearest centre, and the centre with the second shortest road and public travel time	
Wessex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Thames Valley	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Avon	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW Peninsula	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West	Patients are referred to the geographically nearest	

Midlands	centre, and the centre with the shortest road and public travel time	
Arden	Patients are referred to the fourth nearest centre, and the fourth most accessible in respect to both road travel and public transport time. The increased journey times are, however, only 17mins by road and 56 mins by public transport.	
Salop & Staffordshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Merseyside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Greater Manchester	Patients are referred to the second closest SCI centre, however the most accessible by road and second most accessible by public transport	
Lancashire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
South Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and second shortest public travel time (difference of 8 minutes)	
Teesside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Northern	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

OPTION 2

Strengths	This option associates each MTC with it's geographically closest Spinal Cord Injury Centre.	
Weaknesses	This option identifies significant variation between the number of available beds and an equitable share of beds as follows: 89 too few beds at RNOH 80 too many beds at Stoke Mandeville 22 too few beds at Salisbury 16 too many beds at Southport	
Impact on patients from Area		
NE London & Essex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SE London & Kent	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW London & Surrey	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
NW London	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Sussex	Patients are referred to the nearest centre, and the centre with the third shortest road and public travel time (increase of 29 mins by road and 1h07 by public transport)	
East of England	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Wessex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Thames Valley	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Avon	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW Peninsula	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Arden	Patients are referred to the nearest centre, and the second most accessible in respect to both road travel and public transport time. The increased journey times	

	are, however, only 2mins by road and 32mins by public transport.	
Salop & Staffordshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Merseyside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Greater Manchester	Patients are referred to the closest SCI centre and most accessible by public transport, however the third most accessible by road (increase of 15 min journey time)	
Lancashire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
South Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and second shortest public travel time (difference of 8 minutes)	
Teesside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Northern	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

OPTION 3

Strengths	This option associates each MTC with it's most accessible Spinal Cord Injury Centre by Road.	
Weaknesses	This option identifies significant variation between the number of available beds and an equitable share of beds as follows: 116 too few beds at RNOH 96 too many beds at Stoke Mandeville 11 too few beds at Salisbury 26 too many beds at Sheffield	
Impact on patients from Area		
NE London & Essex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SE London & Kent	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW London & Surrey	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
NW London	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Sussex	Patients are referred to the second nearest centre, and the centre with the shortest road and public travel time	
East of England	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Wessex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Thames Valley	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Avon	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW Peninsula	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Arden	Patients are referred to the second nearest centre, and the most accessible in respect to both road travel and public transport time.	
Salop & Staffordshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

East Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Merseyside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Greater Manchester	Patients are referred to the second closest SCI centre and most accessible by road, however the second most accessible by public transport (increase of 4 min journey time)	
Lancashire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
South Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and second shortest public travel time (difference of 8 minutes)	
Teesside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Northern	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

OPTION 4

Strengths	This option associates each MTC with it's most accessible Spinal Cord Injury Centre by public transport.	
Weaknesses	This option identifies significant variation between the number of available beds and an equitable share of beds as follows: 116 too few beds at RNOH 96 too many beds at Stoke Mandeville 11 too few beds at Salisbury 16 too many beds at Southport 14 too many beds at Pinderfields	
Impact on patients from Area		
NE London & Essex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SE London & Kent	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW London & Surrey	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
NW London	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Sussex	Patients are referred to the second nearest centre, and the centre with the shortest road and public travel time	
East of England	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Wessex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Thames Valley	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Avon	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW Peninsula	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Arden	Patients are referred to the second nearest centre, and the most accessible in respect to both road travel and public transport time.	
Salop	Patients are referred to the geographically nearest	

&Staffordshire	centre, and the centre with the shortest road and public travel time	
East Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Merseyside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Greater Manchester	Patients are referred to the closest SCI centre and most accessible by public transport, however the third most accessible by road (increase of 15 min journey time)	
Lancashire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
South Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Yorkshire	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road (difference of 12 minutes) and shortest public travel time	
Teesside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Northern	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

OPTION 5

Strengths		
Weaknesses	This option identifies some variation between the number of available beds and an equitable share of beds as follows: 7 too few beds at RNOH 11 too few beds at Salisbury 10 too many beds at Southport	
Impact on patients from Area		
NE London & Essex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SE London & Kent	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 44 mins and 49 mins respectively)	
SW London & Surrey	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 9 mins and 55 mins respectively)	
NW London	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 36 mins and 52mins respectively)	
Sussex	Patients are referred to the second nearest centre, and the centre with the shortest road and public travel time	
East of England	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time	
Wessex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Thames Valley	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Avon	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW Peninsula	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Arden	Patients are referred to the fourth nearest centre, and the fourth most accessible in respect to both road travel and public transport time. The increased journey times are, however, only 17mins by road and 56 mins by public transport.	

Salop & Staffordshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Merseyside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Greater Manchester	Patients are referred to the closest SCI centre and most accessible by public transport, however the third most accessible by road (increase of 15 min journey time)	
Lancashire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
South Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and second shortest public travel time (difference of 8 minutes)	
Teesside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Northern	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

OPTION 6

Strengths	This option associates each MTC with it's geographically closest Spinal Cord Injury Centre.	
Weaknesses	This option identifies significant variation between the number of available beds and an equitable share of beds as follows: 7 too few beds at RNOH 10 too few beds at Salisbury 6 too many beds at RJAH 6 too few beds at Southport 11 too many beds at Sheffield	
Impact on patients from Area		
NE London & Essex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SE London & Kent	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 44 mins and 49 mins respectively)	
SW London & Surrey	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 9 mins and 55 mins respectively)	
NW London	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 36 mins and 52 mins respectively)	
Sussex	Patients are referred to the second nearest centre, and the centre with the shortest road and public travel time	
East of England	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time	
Wessex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Thames Valley	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Avon	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW Peninsula	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Arden	Patients are referred to the third nearest centre, and the third most accessible in respect to both road travel and public transport time. The increased journey times are,	

	however, only 6 mins by road and 50 mins by public transport.	
Salop & Staffordshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Merseyside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Greater Manchester	Patients are referred to the second closest SCI centre and most accessible by road, however the second most accessible by public transport (increase of 4 min journey time)	
Lancashire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
South Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and second shortest public travel time (difference of 8 minutes)	
Teesside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Northern	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

OPTION 7

Strengths		
Weaknesses	This option identifies some variation between the number of available beds and an equitable share of beds as follows: 13 too few beds at Stoke Mandeville 9 too few beds at RJAH 10 too many beds at Southport	
Impact on patients from Area		
NE London & Essex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SE London & Kent	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 44 mins and 49 mins respectively)	
SW London & Surrey	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 9 mins and 55 mins respectively)	
NW London	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 36 mins and 52 mins respectively)	
Sussex	Patients are referred to the nearest centre, and the centre with the third shortest road and public travel time (increase of 29 mins by road and 1h07 by public transport)	
East of England	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time	
Wessex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Thames Valley	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Avon	Patients are referred to the fourth closest SCI centre, and the fourth most accessible by road (increased journey time of 1h05) but the second most accessible by public transport (increased journey time of 41 mins)	
SW Peninsula	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Arden	Patients are referred to the nearest centre, and the second most accessible in respect to both road travel and public transport time. The increased journey times	

	are, however, only 2mins by road and 32mins by public transport.	
Salop & Staffordshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Merseyside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Greater Manchester	Patients are referred to the closest SCI centre and most accessible by public transport, however the third most accessible by road (increase of 15 min journey time)	
Lancashire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
South Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and second shortest public travel time (difference of 8 minutes)	
Teesside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Northern	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

OPTION 8

Strengths	This option optimises equity of beds for England.	
Weaknesses		
Impact on patients from Area		
NE London & Essex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SE London & Kent	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 44 mins and 49 mins respectively)	
SW London & Surrey	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 9 mins and 55 mins respectively)	
NW London	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time (increases of 36 mins and 52 mins respectively)	
Sussex	Patients are referred to the third nearest centre, and the centre with the second shortest road and public travel time (increases of 8 mins and 51 mins respectively)	
East of England	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and public travel time	
Wessex	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Thames Valley	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Avon	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
SW Peninsula	Patients are referred to the geographically second nearest centre, and the centre with the second shortest road and fourth shortest public travel time (increases of 1h10 and 1h38 respectively)	
West Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Arden	Patients are referred to the nearest centre, and the second most accessible in respect to both road travel and public transport time. The increased journey times are, however, only 2mins by road and 32mins by public transport.	
Salop & Staffordshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

East Midlands	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Merseyside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Greater Manchester	Patients are referred to the second closest SCI centre and most accessible by road, however the second most accessible by public transport (increase of 4 min journey time)	
Lancashire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
South Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
West Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
East Yorkshire	Patients are referred to the geographically nearest centre, and the centre with the shortest road and second shortest public travel time (difference of 8 minutes)	
Teesside	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	
Northern	Patients are referred to the geographically nearest centre, and the centre with the shortest road and public travel time	

Appendix 6. Protocols for Links

Spinal Cord Injury LINKS Project
Roles and Responsibilities

1. Background

The purpose of the LINKS Project is to link every NHS Hospital to a Spinal Cord Injury Centre, so as to ensure that where a person with Spinal Cord Injury is treated in/by the linked hospital, the patient's spinal cord injury needs are met.
This includes:

- **Joint protocols and training** – whereby the SCIC assists the linked hospital in having the skills, services and facilities in place to meet the needs of people with SCI.

- **SCIC outreach advice** – whereby the staff of the linked SCIC are available by telephone and e-mail to provide advice and support to staff in the linked hospital about the care of a patient with SCI.

- **SCIC outreach visits** – whereby the SCIC takes its services to a patient with SCI, and the staff caring for the patient, in the linked hospital.

- **SCIC catchment** – to identify which SCIC normally would take long term responsibility for patients in the geographical regions.

2. Purpose

This paper sets out the expected roles and responsibilities of Linked hospitals and SCICs.

This paper does not supersede or change the outreach requirements set out in the 2013/14 CQUIN pick-list for SCI Services, which was developed and approved before the links were agreed. See Section 5.3.

3. Definitions

SCI: The definition of SCI in the current service specification for SCI applies throughout this document. Patients who do not have SCI as specified are outside the scope of this document.

SCIC: The SCICs are the eight recognised Spinal Cord Injury Centres in England.

Linked Hospitals: For the purpose of this document, a linked hospital may be a Major Trauma Centre, Trauma Unit, other specialised centre, District General Hospital, rehabilitation unit, mental health unit, or any other NHS in-patient facility.

It should be noted that many SCICs are unable to treat children and/or adolescents. For most hospitals the linked SCIC for people under 19 will therefore be different from the linked SCIC for adults.

The geographical areas encompassed by each SCIC and its linked hospitals apply to the organisation of SCI services in that 'catchment' area. The factor which will normally determine which SCIC is initially responsible for the acute care of patient will be **where the patient is now** (i.e. which hospital), not where the patient lives. However exceptions to this principle can be made if it is the best interests of the patient. (See paras 5.4, 5.6 and 5.7 for more detail).

Responsible Commissioner: The definition in the current service specification applies.

Where a patient who would not otherwise be eligible for NHS hospital treatment is being treated by the linked hospital under the 'immediately necessary' rules, the linked SCIC should not refuse to provide outreach advice or an outreach visit. However, the provision of outreach does not constitute a commitment to admit the patient to the SCIC if the patient is not eligible for an elective transfer.

4. List of Linked Hospitals

The process of assigning the Links is described in the document "Developing Geographical Lead Responsibilities for English Spinal Cord Injury Centres" dated 5 March 2013 which describes the methodology used and contains the list of linked hospitals.

It is recognized that these linkages have been designed to make the most appropriate referral pattern in the current circumstances. The distribution of beds in spinal cord injury centres is a historic legacy. As developments occur both in the Spinal Cord Injury Centres and in the Major Trauma Centres, circumstances may arise where it would be more appropriate to consider changing linkages. In the future developments may be able to be directed on a more planned basis to further improve equity of access for patients with spinal cord injury.

The list of linked hospitals to be used is therefore the latest version, as developed by the Clinical Reference Group for Spinal Cord Injury and approved by the NHS Commissioning Board Trauma Programme of Care Board.

Links will be monitored and evaluated as part of the implementation process. Oversight post implementation will be via regional teams (likely through regional Major Trauma Boards) with status reports received by the SCI CRG.

5. Roles and Responsibilities – Spinal Cord Injury Centres

5.1. Newly Injured Patients - Joint Protocols

5.1.1 Joint Protocols withMajor TraumaNetworks

In 2013/14 SCICs will agree protocols with all linked Major Trauma Networks and their participating hospitals. These protocols will cover all the topics listed in

The Initial Management of Adults with Spinal Cord Injuries
Advice for Major Trauma Networks and SCI Centres on the Development of Joint Protocols
18th May 2012
http://www.excellence.eastmidlands.nhs.uk/welcome/improving-care/emergency-urgent-care/major-trauma/major-trauma-related-documents/

And

The Initial Management of Children with Spinal Cord Injuries
Advice for Major Trauma Networks and SCI Centres on the Development of Joint Protocols
To be completed

The content of the Protocols will be consistent with those documents, and with

Management of People with Spinal Cord Injury
NHS Clinical Advisory Groups Report (Trauma)
26th August 2011

http://www.excellence.eastmidlands.nhs.uk/welcome/improving-care/emergency-urgent-care/major-trauma/nhs-clinical-advisory-group/

Any variance in protocols to the default 4 hour timeframe should be approved by the lead commissioners for SCI and Major Trauma, and should only be implemented when the referring hospital is treating patients in line with the Joint Protocols and has all the skills, services and facilities in place to care for the SCI needs of the patient.

In 2013/14 two of the SCICs are not able to admit or provide outreach to patients who are ventilated. In 2013 these two SCICs will agree special Tripartite Protocols under which Clinical Advice, Outreach Visits and SCIC Admission for patients in their linked hospitals will be provided by another SCIC.

5.1.2. Joint Protocols - Other Trauma and Non-Trauma

In 2013/14 SCICs will agree protocols with linked hospitals/ hospital departments which are known or likely to diagnose **newly injured patients not covered by 5.1.1.** This will include patients with non-traumatic cord deficit arising from infection or disease, patients with iatrogenic injury and patients with injury of traumatic origin who have not followed the 'blue light' pathway.

These protocols will cover all the topics listed in

The Initial Management of Adults with Spinal Cord Injuries (patients not admitted via Major Trauma Centre)
Advice for Receiving/Diagnosing Hospitals and SCI Centres on the Development of Joint Protocols
To be developed by CRG

And

The Initial Management of children with Spinal Cord Injuries (patients not admitted via Major Trauma Centre)
Advice for Receiving/Diagnosing Hospitals and SCI Centres on the Development of Joint Protocols
To be developed by CRG

And the Protocols will be consistent with those documents.

In 2013/14 two of the SCICs are not able to admit or provide outreach to patients who are ventilated. These two SCICs will agree special Tripartite Protocols under which Clinical Advice, Outreach Visits and SCIC Admission for patients in their linked hospitals will be provided by another SCIC.

5.2 Newly Injured Patients - Outreach Advice

The SCIC will provide clinical advice by telephone, e-mail or post to linked hospitals on the initial management of newly injured SCIC patients. The default is that such advice will be available 24/7.

Outreach Advice will be provided in respect of all patients referred/registered by linked hospitals, unless another SCIC has agreed in writing to take the lead on outreach for that patient.

Any variance from the provision of 24/7 clinical advice should be approved by the commissioner and should only be implemented if the linked hospitals are fully compliant with agreed Joint Protocols about the early management of the newly injured patient with SCI.

If a referral is received of a patient who has not yet been referred to the linked SCIC, the SCIC receiving the referral should provide such advice as is immediately required and then liaise with the linked SCIC and the referring clinician to agree which SCIC will take responsibility for outreach and admission.

In cases of planned repatriation of NHS patients injured outside England and North Wales, the SCIC which is first contacted should give clinical advice if requested. However it is advisable to arrange for the SCIC nearest to the patient's home to take responsibility for outreach advice and admission, wherever practicable.

5.3 Newly Injured Patients - Outreach Visits

The SCIC will visit newly injured SCI patients in linked hospitals who have been referred and/or registered on the National SCI Website, unless

- The patient does not have SCI as defined in the current service specification. (Example: SCICs sometimes receive referrals of patients who have vertebral injury but not SCIC. These patients fall outside the remit of this document.)
- The patient has been admitted to a SCIC within 7 days of referral (so permitting the SCIC not to visit a patient if they have already arranged an early transfer)
- Another SCIC has agreed in writing to take the lead on outreach,
- The patient is outside England and North Wales.

The standards and timescales for outreach visits are as set in current service agreements.

Any variance from the provision of SCIC outreach visits should be approved by the commissioner and should only be implemented if the linked hospitals are fully compliant with agreed Joint Protocols about the early management of the newly injured patient with SCI.

2013/14 CQUIN

For 2013/14 outreach visits are the subject of a scheme in the 'pick-list' of specialised services CQUIN schemes, as follows:

Microsoft Word - SCI - Outreac...

The CQUIN Scheme was developed and approved before this paper. (See paragraph 2). Providers and Commissioners should note that the responsibilities described in the CQUIN pre-date the agreement of the Links and are slightly different. In particular under the CQUIN scheme the default position is that the SCIC to which the patient *has been referred* is responsible for outreach, rather than the Linked SCIC.

SCICs who are operating the CQUIN in 2013/14 will need to follow the wording of the CQUIN to qualify for payment.

However, the CQUIN makes the exception to the denominator as follows: *"Patients for whom another SCIC has agreed in writing to take the lead on outreach".* This means that if a patient is referred by a non-linked hospital, the SCIC can request the linked SCIC to undertake the outreach visit. Provided there is an e-mail on file from the linked SCIC agreeing to take the lead on outreach, the SCIC to which the patient was referred does not need to include the patient in their denominator for the CQUIN. It is therefore to be hoped that SCICs operating the CQUIN scheme in

2013/14 will be able to qualify for payment whilst co-operating in moving towards the provision of catchment-based outreach.

The overriding principle which should apply to outreach, waiting lists and admissions is that no patient should 'fall between the cracks.'

5.4 Newly Injured Patients - Admission to the SCIC

The SCIC will establish the suitability of the patient for admission to the SCIC.
Most patients will benefit from an early transfer to the SCIC, but there are a small number who do not transfer. These include:

- Patients with other severe injury. Transfer to the SCIC may be deferred for an indefinite period in some cases.
- Patients with pre-existing health issues that render them unable to benefit from full SCIC rehab. If a short admission to the SCIC for bowel, bladder and seating management is not appropriate, they will be offered an outpatient appointment.
- Patients who decline to transfer to the SCIC because they do not want to be away from family etc. In such cases the SCIC outreach team will discuss the benefits of SCIC rehabilitation with the patient and family, and offer a short rehab programme or outpatient appointment.

The default position is the linked SCIC will admit the patient as early as possible. In managing and prioritising the waiting list, the SCIC will follow the NSCISB Common Admissions Policy, as specified in 2013/14 Service Specification.

NSCISB 10 Feb 2012 Item 5.4 Co...

The standards for waiting times will be as set out in service level agreements.

In 2013/14, pending a review of demand and capacity in the SCICs, there are no contractual target times for elective transfers to the SCICs.

Admission to non-Linked SCIC

The LINKS Project does not preclude the admission of a newly injured patient to a SCIC other than the linked SCIC. This may occur because of the patient's personal circumstances, the preference of the referring clinician, or because a bed has become available more quickly elsewhere.

When a SCIC has received a referral of a newly injured patient from a hospital to which it is not linked, it will liaise with the linked hospital and they will agree between them in writing which team will provide outreach.

When a SCIC, for whatever reason, encounters difficulty admitting newly injured patients within contractual target times, it will inform commissioners, and liaise with other SCICs with a view to accepting some patients.

'Out of Area' Patients

When it is clear that transfer to a SCIC other than the Linked SCIC would be preferable for a patient (usually because the patient has been injured away from home or wishes to be near family), the initial call should still be made to the Linked SCIC, which will be responsible for initial advice and outreach.

The linked SCIC will be responsible for contacting the second SCIC. The default will be that linked SCIC is responsible for the outreach and admission unless and until the second SCIC has agreed in writing to assume responsibility.

5.5 Patients living with SCIC - Joint Protocols

In 2013/14 the SCIC will agree protocols with linked hospitals which are known or likely to admit **patients living with SCI**. These will cover planned or emergency admissions for conditions related or unrelated to SCI, including patients who have been admitted via accident and emergency departments.

These protocols will cover all the topics listed in

Guideline to be developed by CRG (adult)

And

Guideline to be developed by CRG (children)

And the Protocols will be consistent with those documents.

5.6 Patients living with SCIC - Outreach Advice

The SCIC will provide clinical advice by telephone, e-mail or post, on the special care needs of people with SCI to linked hospitals who are admitting people with SCI. The default is that in an emergency such advice will be available 24/7.

Any variance from the provision of 24/7 clinical advice should be approved by the commissioner and should only be implemented if the linked hospitals are fully compliant with agreed Joint Protocols about the special care needs of people with SCI.

'Out of Area' Patients

The SCIC will also provide clinical advice by telephone, e-mail or post, on the special care needs of people with SCI to **non-linked** hospitals who are admitting person with SCI, if the patient is a former inpatient of the SCIC and/or is being routinely followed

up by the SCIC. The default is that in an emergency such advice will be available 24/7.

5.7 Patients living with SCI - Outreach Visits

The SCIC will provide outreach visits to patients living with SCI who are in a linked hospital, and the team caring for the patient.

This category of Outreach Visit is a component of the SCIC service as described in the Service Specification.

The need for a visit will depend on the condition of the patient, the length of stay and the level of compliance with agreed Joint Protocols. In 2013/14 there are no contractual targets.

Out of Area' Patients

The SCIC will not normally be expected to provide an outreach visit to a patient living with SCI who is a non-linked hospital, but if they believe such a visit is advisable they should ensure that the linked SCIC is aware of the circumstances.

6. Roles and Responsibilities – Linked Major Trauma Networks

Linked MTCs and their participating hospitals will:

- Agree Joint Protocols with the linked SCIC as described above in paragraph 5.1.1.
- Have in place the staffing, infrastructure, skills and facilities to enable the agreed Joint Protocols to be followed.
- Following admission of a patient who has or may have SCI, contact the linked SCIC within 4 hours of injury (or according to local written protocols) by contacting the SCIC by telephone, preferably by using the single national phone line 0844 892 1915, to discuss and agree the optimum pathway for the individual patient.
- Register the newly injured patient within 4 hours of injury on the National SCI Database www.NSCISB.nhs.uk
- Facilitate the SCI Outreach Team in their work.
- Implement agreed weaning plans.
- Keep the linked SCIC informed of the whereabouts of the patient. This is particularly important when the patient has been moved to another hospital.
- Keep the SCIC informed of any change in the condition of the patient, in particular respiratory requirements and the outcome of weaning plans, which may result in a SCIC bed becoming available more quickly.
- If the patient is moved to another ward/site/hospital, ensure that staff are informed about the referral to the SCIC, outreach visits, and any special plans such as weaning plans.

7. Roles and Responsibilities - Other Linked Hospitals

Other Linked Hospitals which are likely to receive or diagnose **new spinal cord injury** will:

- Agree Joint Protocols with the linked SCIC as described above in paragraph 5.1.2
- Have in place the staffing, infrastructure, skills and facilities to enable the agreed Joint Protocols to be followed.
- Following admission of a patient who has or may have SCI, contact the linked SCIC within 4 hours of injury (or according to local written protocols) by contacting the SCIC by telephone, preferably by using the single national phone line 0844 892 1915, to discuss and agree the optimum pathway for the individual patient.
- Register the newly injured patient at the earliest opportunity on the National SCI Database **www.NSCISB.nhs.uk**
- Facilitate the SCI Outreach Team in their work.
- Implement agreed weaning plans.
- Keep the linked SCIC informed of the whereabouts of the patient. This is particularly important when the patient has been moved to another hospital.
- Keep the SCIC informed of any change in the condition of the patient, in particular respiratory requirements and the outcome of weaning plans, which may result in a SCIC bed becoming available more quickly.
- If the patient is moved to another ward/site/hospital, ensure staff are informed about the referral to the SCIC, outreach visits, and any special plans such as weaning plans.

8. Hospitals which admit people living with SCI

Linked hospitals which admit or are likely to admit people with spinal cord injury will:

- Agree Joint Protocols with the linked SCIC as described above in paragraph 5.5.
- Have in place the staffing, infrastructure, skills and facilities to enable the agreed Joint Protocols to be followed.
- Recognise that people living with SCI are 'expert patients' and will be able to advise on their own routine SCI care.
- Recognise that people with SCI have special care requirements, and are liable to particular risks, particularly if the patient will be unconscious or otherwise unable to manage his/her own care.
- Immediately following a decision to admit a patient who has SCI:
    - Ask the patient which is the patient's 'own' SCIC. (The default if the patient has no preference is the Linked SCIC.)
    - If requested/permitted by the patient, contact the patient's SCIC to inform staff of the planned admission and discuss the patient's SCI care needs.
- Ensure that the appropriate arrangements are in place, including turning, bladder and bowel management.

9. SCI Commissioners, Strategic Clinical Networks and Trauma Operational Delivery Networks

Lead Commissioners (including, as appropriate, the co-ordinating Commissioners for SCI and Major Trauma and the Area Teams) will:

- Verify that Joint Protocols described in Section 5 have been agreed by specified timescales, that they cover all the topics listed and are consistent with guidelines listed above.
- Approve any variances in protocols from the default 4 hour referral of newly injured trauma patients, and the 24/7 provision of clinical advice by the SCIC, only if satisfied that the relevant referring hospitals are treating SCI according to agreed Joint Protocols.
- Monitor that referrals of newly injured trauma patients are being made within 4 hours of injury, or to locally agreed timescales, and if this is not the case, discuss this with the referring Major Trauma Network and the Co-ordinating Commissioner for Major Trauma.
- Approve any variance to the national standards for SCIC outreach, only if satisfied that the linked hospitals have the staff and facilities in place to treat patients in accordance with the Joint Protocols and the treatment provided to people with SCI is compliant with the Joint Protocols.
- Consider whether additional standards should be included in SCI and Major Trauma contracts.
- After the completion of the SCI Capacity Review,
    - work towards the agreement of target lengths of wait for SCICs for newly injured patients,
    - revise the NSCISB Common Admissions Policy accordingly.
    - decide whether the Linked SCIC should be responsible for finding a SCIC bed for the newly injured patient, or whether a bed bureau function should be developed through the National SCI Database.

10. The CRG

The CRG for SCI will:

- Complete The Initial Management of **Children** with Spinal Cord Injuries - Advice for Major Trauma Networks and SCI Centres on the Development of Joint Protocols

- Agree Links for children with SCI, in liaison with the CRGs for Major Trauma and Children's Services.

- Develop a list of Joint Protocols, and 'Core' Protocols (to form the basis of locally agreed versions) for the treatment of Newly Injured Adults and Children who have **not been admitted via Major Trauma Networks.** This will include non-traumatic injury arising from infection or disease, iatrogenic injury and traumatic injury which has not followed the 'blue light' pathway.

  Note: this will be a 'companion' document to the existing guideline relating to Joint Protocols with Major Trauma Networks .

- Develop a list of Joint Protocols and 'Core' Protocols (to form the basis of locally agreed versions) for the treatment of patients living with SCI who have been or are planned to be admitted to the linked hospital. These will include patients living with SCI who are admitted via accident and emergency departments following an event related or unrelated to SCI.