Regional Spinal Networks Proposal

A. Introduction

This document is a template for the formation (including core objectives), running and monitoring of a Regional Spinal Network (RSN).

The proposed 'Core Principles' for each Regional Network are:

1. Excellent patient care through National and Regional Policies and Pathways
2. Reduced variation in surgical practice
3. Reduced risk of litigation
4. Supported service evaluation, audit and research
5. Sustainable and motivated working practice for all staff
6. Education for all staff
7. Future workforce provision

B. Potential Advantages of RSN

- Regional policies and pathways for elective and emergency care
- Agreed policies in every Trust for MRI imaging especially in the emergency patient
- Electronic referral and response system
- Repatriation policy
- BSR implementation with data collection and entry assistance (current users of Spine Tango will continue)
- Regional service evaluation, audit and MDT to ensure quality
- Equalisation of waiting times for elective surgery
- Implementation of Pathfinder across the region
- Quality assurance of Any Qualified Provider (AQP)
- Orthopaedic and Neurosurgery collaboration
- Improved and defined Regional Spinal Training
- Agreed Spinal Consultant appointment strategy for the region
- Agreed PAs and SPAs for roles within the RSN
- Co-ordinated research, audit and service evaluation
- National compilation of learning points from deaths, never events, serious untoward events, duties of candour, root cause analyses and risk management issues

C. Clarify Initial Requirements with NHSE

1. Letter of support to Trusts (Appendix 1)
2. Maps of NHS Trusts, Local Area Teams, CCGs commissioning spinal services and co-commissioning agreements.
3. List of Trusts, Chief Executives and Medical Directors.
4. Approval CQUIN 2016/17 mandatory to all Spinal Hubs.
5. The Regional Network must have a nominated Network Manager to organise the RSN, sort out problems and concerns, provide data for the Regional Meetings (Local MDT Minutes review, Network Strategy, Waiting times across Network etc.) and monitoring data for the RSN and Commissioners. Funding for this post must be mandated from the NHSE Commissioning Hubs.
6. 1PA for RSN Clinical Lead for initial 2 years then 0.5PA for subsequent years must be funded by the Spinal Hub.

D. Define the Hospitals within the RSN

1. Define the Spinal Hub(s): The RSN comprises a spinal hub(s) and a number of partner hospitals. The Spinal Hub is where the 24/7 emergency spinal service is located but not necessarily where all the emergency work is done. A region may have more than one Spinal Hub. A minimum of 6 Consultants are required for a 24/7 emergency spinal service.
2. Spinal Hubs will have integrated relationships with a number of partner hospitals which will in general be Trauma Units and District General Hospitals:
    a. Hospitals where there is a group of three or more spinal surgeons undertaking a varied caseload which might include specialised spinal surgery and emergency spinal surgery which might be commissioned by the relevant area team or by the CCG.
    b. Hospitals where one or two surgeons are involved in spinal surgery on a part time or special interest basis. It would be expected that these hospitals perform only non-specialised spine surgery commissioned by local CCGs.
    c. Hospitals with an emergency department but without any surgeons undertaking spinal surgery on site.
3. The configuration of networks will be locally determined. In some areas Partner hospitals will potentially have a choice between two hubs, and this is a local decision. If there is concern or disagreement, these should be documented with arguments for and against the proposed Regional allocation and sent to the National Clinical Director of Spinal Disorders, the President of

British Association of Spine Surgeons, the President of the British Scoliosis Society, the President of the Society of British Neurological Surgeons and the Chair of the United Kingdom Spinal Societies Board. They will discuss the issues with the Medical and Clinical Directors of the Hospitals concerned and the Commissioners and make a decision.

E. Consultant Spinal Surgeons & Procedures

Each hospital performing spinal surgery should document resources and workload (Appendix 2 & 3):

1. Number of Spinal Consultants and WTE Consultants in each hospital (many Consultants work part time or in more than one Trust)
2. Spinal services performed in each hospital:
    a. Emergency on-call: yes/no, times full cover offered e.g. 8-8 Monday-Friday or full service
    b. Emergency surgery: what emergency surgery is undertaken and what is transferred and to where?
    c. Specialised surgery: what specialised surgery is undertaken and by whom?
    d. Non-specialised surgery
    e. Paediatric surgery: yes/no
3. MRI availability in each hospital with an Emergency Department – operating time and on-call service
4. Current waiting list including Referral to Treatment (RTT) dates – anonymised for patient details but with surgery title and RTT date

F. Emergency Care

The Spinal Hub(s) will provide a full covered (24/7) Consultant Spinal on-call for emergencies. Partner Hospitals may provide partial on-call services (e.g. 8-8 weekdays) or may provide a service for some or all spinal emergencies where urgent but not emergency surgery is required and this will be decided at Regional level. Where partner hospitals are proposing to do specialised spinal emergency surgery, consideration must be given to local resources including equipment (without hire charges) and necessary support services (oncology, microbiology, imaging).

National Policies and Pathways have been developed for Spinal emergencies and indication is given where regional variation may be required (see Appendix 4). All acute primary care referrals should be assessed and admitted by the orthopaedic team at the patient's nearest acute hospital. All

Emergency Department (ED) referrals in partner hospitals should initially be assessed by the local orthopaedic team.

For hospitals with limited or no spinal presence, the objective is to provide a system of advice and support to allow as many spinal emergency patients as possible to be safely treated as close as possible to their own homes and to support local orthopaedic teams in achieving this objective. Continued advice as management progresses is essential. Clear, well documented communication using an Electronic Patient Referral System (EPRF) is mandatory. This allows for continuity of care in partner hospitals. There are three such systems available at present: Refer-a-patient, Orion and NORSE.

This system must be commissioned by the spinal hub. The system must fulfil some basic requirements:-

- The referring clinician must provide a written summary of the clinical situation, which should be proforma driven for core data and allowing additional free text.
- Provide a list of imaging sent with the referral through the Image Exchange Portal (IEP)
- Allow clarification of any points of the presentation
- Allow updates in the light of further investigations or change in clinical condition
- Allow written advice to be received and up-dated in the light of further information, or consultation with senior opinion.
- Record the identity of staff involved and their seniority.
- Provide an audit trail.
- Allow analysis of referrals patterns and workload.
- Linkage to the British Spine Registry (BSR) for admitted patients would be desirable

Initial MRI imaging should be provided in the hospital of presentation if the MRI scanner is in operation at the time. Elective imaging lists must have protocols that allow them to be interrupted or extended for emergency referrals. This must apply to weekend sessions as well as weekday sessions. NICE guidance for metastatic spinal cord compression indicates that emergency scanning is most cost effective if scanning is available from 8 until 8 on weekdays and from 9 until 3 at weekends.

Partner Hospitals should provide prompt and uncomplicated repatriation for patients requiring rehabilitation (with the exception of spinal cord injury) or when surgery is not required. In addition to being better for patients and their relatives, this often allows easier access to any required local services and shorter overall hospitalisation. A mechanism must be developed for the hospital where the patient is admitted to inform the receiving hospital that the patient is ready for repatriation.

Failure of repatriation within 48 hours will result in a fine to the receiving Trust of £500 per day which will be given to the Trust where the patient is admitted.

G. Elective Care

1. Local MDT

All hospitals performing specialised spinal surgery (hub and partner) must have a local MDT on a weekly basis and this should be job planned as direct clinical care. Core membership includes:

- All local spinal Consultants
- Radiology Consultants to provide advice on imaging
- Data Entry Manager for BSR (or Spine Tango if existing user)
- Other members to be agreed locally who may attend less frequently:
    - Oncology
    - Infectious Diseases / Microbiology
    - Pain management
    - Spinal cord injury
    - Triage and Treat services
    - Theatre team representative

The MDT must discuss and minute:

1. Emergency cases who are currently inpatients or who have had surgery (excluding injections) since the previous MDT.
2. All inpatients in the previous 7 days should be listed and any complications documented on the BSR including date of discharge. All inpatients must be entered into the BSR where the patient consents.
3. Number of elective and emergency operations (excluding injections) performed since the last MDT must be minuted including the number entered onto the BSR for each of elective and emergency surgery.
4. Elective cases usually for 2 weeks in the future. Local requirements may necessitate that non-specialised cases (lumbar decompressions, anterior cervical decompression and fusion etc) are not discussed. Equipment and bed requirements should be discussed and documented to reduce cancellations. All specialised spinal surgery cases must be discussed (all spinal deformity, all cervical except ACDF and uninstrumented posterior surgery; all thoracic; all anterior lumbar; all posterior instrumented surgery more than 2 levels). Any

cases discussed at other MDTs – e.g. primary intradural tumours do not require further discussion.

5. Complex cases for discussion regarding further management.
6. Service evaluations, audits, research and teaching should be incorporated where possible to enhance education for Consultants and junior staff. This should be documented including any learning points, changes to practice and ideas for future reviews.
7. Specific additional specialised MDTs should be established where relevant for spinal infection and spinal tumours.
8. Any risk management issues:
    a. Deaths
    b. Serious Untoward Incidents
    c. Never Events
    d. Duties of Candour
    e. Root Cause Analysis
    f. Risk Management issues

2. Regional Meeting

A Regional Spinal Meeting must occur every 3 months for the first year and then at least every 4 months. If the Regional Spinal Consultants feel this meeting is more beneficial every 3 months rather than every 4 months, this must be accepted by the Regional Trusts with time in job plans and resources. It should be organised by the Regional Spinal Network Manager in conjunction with the RSN Clinical Lead and attended by the Spinal Consultants in the RSN (including all AQPs) and the core membership of the hosting hospital. During the first year, issues regarding RSN structure and function should be discussed to ensure the Network is functioning well. Subsequently, the Regional Meeting should discuss:

1. Complex cases
2. Local service evaluations and audits including complications, PROMS and PREMS
3. Regional network problems – policies, pathways, workforce planning and waiting times
4. A review of all complications from each hospital since the previous meeting. Individual cases may be discussed if felt important but infection rates must be discussed.
5. A summary of any clinical risk management issues will be documented in the RSN Risk Register:
    a. Deaths
    b. Serious Untoward Incidents

c. Never Events
d. Duties of Candour
e. Root Cause Analysis
f. Risk Management issues

A summary of the RSN Risk Register with patient identifiers removed should be submitted to the National Spinal Network Team who will collate any 'lessons' to circulate to all the RSNs.

The MDT is not a disciplinary venue. If commissioners have substantial concerns about the practice of an individual surgeon or Trust then commissioners must initiate an investigation out with the MDT structure. Clinicians will assist with provision of advice, but in some cases it is recognised that advice from outside the Network may be required to allow maintenance of the normal Network functioning.

3. Inter Hospital Cooperation

In elective practice the network may also make provision in appropriate circumstances for surgeons from partner hospitals to undertake specialised procedures in the hub to take advantage of facilities or surgical support.

Similarly, consideration should be given to Consultants from the Spinal Hub offering a clinic +/- non-specialised spinal surgery in partner hospitals with no spinal service. This will provide a more local service to patients and ease capacity problems in the spinal hub whilst allowing the spinal hub to appoint Spinal Consultants to reduce rota frequency and supply capacity for specialised spinal surgery.

MRI scanning should be organised by the treating Consultant but a Network agreement must allow this to be performed and reported at a Network hospital close to the patients home if clinically acceptable with images and reports transferred through an image transfer system.

Consideration should be given to mechanisms to ensure that all hospitals within the RSN have approximately equal waiting times.

4. Back Pain and Referrals from Primary Care

All the hospitals in the network will have a role in the management of referrals from primary care and the audit and governance of these referrals. Effective and timely primary care pathways will reduce disability, reduce inappropriate referrals and expedite referral of patients with surgically remediable conditions. Implementation of the National Back Pain Pathway (Pathfinder Project) will involve co-operation of CCGs, all regional hospitals, spinal Consultants and established triage and treat services.

5. Other Providers

In some networks, elective spinal surgery may be performed by Independent providers who undertake Any Qualified Provider (AQP) work. These providers will need to engage with the RSN providing:

- Surgeon names, training and scope of practice
- Number and type of patients being treated
- Clear policy for management of complications whilst an inpatient or during follow-up care
- Mandatory data entry into the BSR including PROMS and complications for all patients
- Audits of practice to be agreed by the RSN and Commissioners. These should either be presented at the RSN Meeting or reviewed by the RSN Clinical Lead.

Failure of an AQP to co-operate with the RSN should be documented to the CCG with suggested action.

H. British Spine Registry (BSR)

For those Centres undertaking specialised spine surgery the use of the BSR is mandatory[1]. It is strongly recommended that the BSR is also used for non-specialised spinal surgery to provide the audit and outcome data which is essential for a quality control and effective governance.

The registry may be used by the network to monitor the number and location of procedures and ensure that patient outcomes and experience (PROMs and PREMs) are recorded.

I. CQUIN

The Trauma Programme of Care has supported a CQUIN for the Regional MDT for 2015/2016, which has been modified for 2016/17.

J. Service Evaluation / Research / Audit

The RSN must establish a plan for service evaluation, audit and spinal research. Time must be considered in job planning to allow this. It would be anticipated that each RSN would distribute 1PA for Consultant(s) doing research although the productivity achieved must be measured for recurrent funding. This should ideally be considered for pump priming research.

[1] Spine Tango is a suitable alternative for existing users of this system. Data will be transferred into the BSR

K. Training

Spinal networks will also improve spinal training by providing posts for trainees at a level appropriate to their experience. Provision for combined spinal surgery training between neurosurgery and orthopaedic surgery is anticipated within a year of RSN introduction but should preferably be part of the Network inception.

A Regional Education Strategy should be agreed for GPs, Triage and Treat Practitioners and Hospital Staff.

L. Resources

- When established the Networks will require some overall funding, which may come from Participating Trusts and Commissioners.
- **Participating surgeons, radiologists and other professionals will need PA allowance in their job plans to plan for and attend required MDTs and Regional Meetings**. On call PAs may need adjusting for increased referrals and record keeping. Referrals may be complex, e.g. spinal metastases, and a time allowance with some admin support is required.
- Funding for RSN Manager.
- Funding for RSN Clinical Lead.
- If virtual clinics are considered time will be required, as well as administrative support to produce a written response to patient and GP. These should be considered as a form of out-patient referral.
- Administrative support will be required for the MDT, and for surgeons attending from partner hospitals.
- Data manager for BSR.
- Arrangements for commissioning of any cross working arrangements between hospitals.

M. Benefits

Benefits for Patients:

1. Excellent quality 24/7 emergency spinal service with as much as possible safely occurring as close to home as possible
2. Evidence based treatments
3. Reassurance of quality across all providers with emphasis on Getting It Right First Time (GIRFT)

Benefits for Spinal Hubs:

1. Clear pathways and protocols and a 24/7 spinal emergency service will optimise treatment, shorten length of stay and improve patient outcomes.
2. Documented clinical advice to partner hospitals will reduce the need for some patient transfers and reduce the risk of litigation.
3. MRI imaging policy will reduce the need to transfer patients as many scans for cauda equina syndrome are negative (80-90%).
4. A mandatory repatriation policy will improve bed availability.

Benefits for Spinal Partners:

1. Offering a good quality, safe spinal service will reduce litigation
2. Treating patients close to their homes
3. Establishing an excellent working relationship between partner and hub at a clinical level
4. An established and reliable Spinal Emergency Service
5. Reduced risk of litigation due to the use of established pathways and documentation

Benefits for Commissioners:

1. Clear regional policies for who does what and where
2. Reduced variation
3. Defined Network monitoring
4. Collection of outcome measures and complications

N. Stakeholders

- United Kingdom Spinal Societies Board (UKSSB)
- British Association of Spine Surgeons (BASS)
- British Scoliosis Society (BSS)
- Society of British Neurological Surgeons (SBNS)
- Society of Back Pain Research (SBPR)
- British Society of Skeletal Radiologists (BSSR)
- Complex Spinal Surgery Clinical Reference Group
- Trauma Programme of Care Board NHSE
- NHS Litigation Authority – to be confirmed

O. Measurement

Initial measurement will be more concerned with 'process' rather than results and will indicate the stage of development of the RSN.

Subsequent measurement will focus more on what the RSN does, service evaluations, audits, PROMS, PREMS and complications.

Initially the following assessment tool should be used (Appendix 5):

Criteria	Evidence
Define hospitals within RSN	List of hospitals indicating spinal hub or partner
Confirm 24/7 rota in spinal	Rota frequency in spinal hub(s) and confirm 24/7 + on-call in any partner hospitals and level of cover
WTE Spinal Consultants	List Spinal Consultants and PA allocation for each hospital in RSN
Details of surgery performed in each hospital	For hub(s) and partner hospitals confirm specialised / non-specialised / paediatric spinal surgery
AQP	Confirm AQP providers and which hospitals they are operating from
Waiting times	Average time to outpatients by each hospital / AQP. Number of 18, 26,52 week breaches for each provider
MRI	Confirm written agreement from each partner hospital to interrupt MRI lists for emergency spinal scans for suspected cauda equina syndrome or spinal cord compression and written procedures for performing urgent MRI scans at times other than when the local MRI scanning facility is operational, (i.e. out of hours.)
Electronic Referral System	Introduce electronic referral system in each spinal hub and any other hospital offering an on-call service for all non-GP referrals
Repatriation	Confirm agreement at Medical Director level regarding repatriation back to local hospital with associated penalties at 48 hours
British Spine Registry (BSR)	Confirm use of the BSR for all non-injection procedures. Confirm number of WTE BSR data managers
Local MDT	Confirm active local spinal MDT when specialised spinal surgery is being performed. Must include a radiologist and must be minuted

Regional Spinal Meeting	Confirm dates and attendance at Regional Spinal Meeting which must for the first year be every 3 months and then at least 4 monthly after that
RSN Manager and Clinical Lead	Confirm presence of a Spinal RSN Manager and a Clinical Lead (0.5PAs)
Risk Management	Evidence of recording all risk management issues in the RSN Risk Register: • Deaths • Serious Untoward Incidents • Never Events • Duties of Candour • Root Cause Analysis • Risk Management issues

Appendix 1: Letter to Chief Executive and Medical Director

Dear Chief Executive / Medical Director

The Spinal Service in England requires a more organised structure to enable emergency and elective work to be performed at the highest quality and to ensure waiting lists are controlled. To this aim, the National Spinal Transformation Project aims to:

1. Promote the Spinal Pathfinder Project across England. This is a pathway for treating patients with lumbar back and/or radicular pain. This aims to reduce pressure on secondary services by appropriate early management of these conditions and to reduce long-term morbidity.
2. Adopt a model of Regional Spinal Networks which aims to implement:
    a. Regional policies and pathways for elective and emergency care.
    b. Agreed policies in every Trust for MRI imaging especially in the emergency patient
    c. Electronic referral and response system.
    d. Repatriation policy.
    e. BSR implementation with data collection and entry assistance (current users of Spine Tango will continue).
    f. Regional service evaluation, audit and MDT to ensure quality.
    g. Equalisation of waiting times for elective surgery.
    h. Implementation of Pathfinder across the region.
    i. Quality assurance of AQP.
    j. Orthopaedic and Neurosurgery collaboration.
    k. Improved and defined Regional Spinal Training.
    l. Agreed Spinal Consultant appointment strategy for the region.
    m. Agreed PAs and SPAs for roles within the RSN.
    n. Co-ordinated research, audit and service evaluation.
    o. National compilation of learning points from deaths, never events, serious untoward events, duties of candour, root cause analyses and risk management issues.
3. Introduce measures to reduce waiting times in Spinal Surgery.

To this end, this letter is to mandate support to the Spinal Surgeons and Commissioners working towards implementation of Regional Spinal Networks. Details are contained in the attached document. Support from the Clinical Directors of Orthopaedics, Neurosurgery and Radiology will be required.

Appendix 2: Example of Services Provided by a RSN

NHS / Foundation Trust	Hub Centre	Number of Spinal Surgeons	MRI	On-Call Service	Specialised Surgery	Adult Deformity	Paediatic Deformity	Intra-dural
A	A	8	24 hour 7 days	Yes - 24/7	Yes	Yes	Yes	Yes
B	B	6	24 hour 7 days	Yes - 24/7	Yes	Yes	No	No
C	C	5	24 hour 7 days	Yes - 24/7	yes	yes	yes	No
D	D	3	24 hour 7 days	Yes - 24/7	Yes	No	No	Yes
E	B	1.5	Weekday 8 - 5	Weekday 8-5 via T&O	No	No	No	No
F	B	2	Weekday 8 - 5	Weekday 8-5 via T&O	No	No	No	No
G	D	1	Weekday 8 - 5	Weekday 8-5 via T&O	No	No	No	No
H	D	2	Weekday 8 - 5	Weekday 8-5 via T&O	No	No	No	No
I	D	3	Weekday 8 - 5	Weekday 8-5 via T&O	No	No	No	No
J	R	2	Weekday 8 - 7	Weekday 8-5 via T&O	No	No	No	No
K	R	2.5	Weekday 8-5	Weekday 8-5 via T&O	No	No	No	No
L	R	2	Weekday 8-5	Weekday 8-5 via T&O	No	No	No	No
M	C	1	Weekday 8-5	No on-call service	No	No	No	No
N	A & B	0	Weekday 8-5	No on-call service	No	No	No	No
O	A	0	Weekday 8-5	No on-call service	No	No	No	No
P	C	0	Weekday 8-5	No on-call service	No	No	No	No
Q	A	0	Weekday 8-5	No on-call service	No	No	No	No

Appendix 3: Example of Spinal Surgeons Working in a RSN

Consultant	Hospital	Hub Centre	Training
	A	A	Neurosurgical
	A	A	Neurosurgical
	A	A	Orthopaedic
	A	A	Orthopaedic
	A	A	Neurosurgical
	A	A	Neurosurgical
	A	A	Neurosurgical
	B	B	Orthopaedic
	B	B	Orthopaedic
	B	B	Orthopaedic
	B	B	Orthopaedic
	B	B	Orthopaedic
	B	B	Orthopaedic
	C	C	Orthopaedic
	C	C	Orthopaedic
	C	C	Orthopaedic
	C	C	Orthopaedic
	C	C	Orthopaedic
	D	D	Neurosurgical
	D	D	Neurosurgical
	D	D	Neurosurgical
	E	B	Orthopaedic
	E	B	Orthopaedic
	F	B	Orthopaedic
	F	B	Orthopaedic

	G	D	Orthopaedic
	H	D	Orthopaedic
	H	D	Orthopaedic
	I	D	Orthopaedic
	I	D	Orthopaedic
	I	D	Orthopaedic
	J	C	Orthopaedic
	K	O	Orthopaedic
	K	O	Orthopaedic
	L	O	Orthopaedic
	M	O	Orthopaedic
	M	O	Orthopaedic
	M	O	Orthopaedic
	N	A	Orthopaedic

Appendix 4: Policies and Pathways for Spinal Emergencies

If specialist spinal input is deemed necessary the process should be initiated by the on-call Registrar and the patient received by at least SpR grade clinicians.

These include:

1. Cauda Equina Syndrome – suspected or MRI proven
2. Spinal Cord Injury
3. Upper and/or lower limb neurological deficit
4. Spinal tumour (usually metastatic) with spinal cord compression, impending spinal cord compression or pathological fracture
5. Spinal infection
6. Spinal fractures / dislocations - excluding simple osteoporotic fractures with no neurological deficit

Cauda Equina Syndrome

Immediate referral for red flags or impending or complete cauda equina syndrome. Lumbar spine MRI scan should be organised and reported locally within 3 hours. The only exception will be if the local MRI scanner is closed as this condition MUST displace other planned MRI scans. If the local scanner is closed then the patient must be transferred urgently for an MRI to the Spinal Hub. For MRI scans done outside the Spinal Hub, the Spinal On-Call Service must be informed urgently if the scan is positive or equivocal, and images must be linked by an image transfer system. Isolated symptoms of bilateral lower limb radicular pain, perianal or genital pins and needles or altered sensation should raise suspicion in addition to the usual urinary symptoms and these are considered the 'red flags' of cauda equina syndrome.

The BASS / SBNS Standards of Care for Cauda Equina Syndrome state 'The spinal societies (BASS and SBNS) strongly recommend that MRI scanning should be undertaken urgently at the hospital receiving the patient in order to ensure timely diagnosis and, where appropriate, immediate referral and transfer to a spinal unit'.

Spinal Cord Injury

Spinal Cord Injury has an Injury Severity Score of 16, and so as major trauma should be triaged to the nearest Major Trauma Centre. If presented to the ED of a Trauma Centre it should be considered for ED to ED transfer. Significant cord deficit will alter the presentation of and potentially mask other significant injuries. High dose prednisolone should not be given for traumatic spinal cord injury.

All patients should have a CT scan of the whole spine with coronal and sagittal reconstructions. CT chest, abdomen, pelvis is essential to exclude intra-thoracic or intra-abdominal injuries. Transfer off the spinal board is urgent once the patient arrives in hospital with appropriate pressure area care. The patient's neurological status must be documented on an ASIA chart. Bladder catheterisation is required. Early referral (within 24 hours) to the Linked Spinal Cord Injury Centre (SCIC) is appropriate, and will initiate outreach visits by liaison staff.

If possible isolated spinal cord injuries should be transferred directly to the Linked SCIC and not to the MTC. Patients who might benefit from spinal surgical intervention may be transferred to the MTC if the SCIC does not have the capacity to undertake spinal surgery. No patient with isolated spinal cord injury in whom surgery is not indicated should be transferred from a Trauma Centre to the Major Trauma Centre.

Upper and/or lower limb neurological deficit with suspected spinal pathology

Management will depend on the duration, speed of onset and recent deterioration but where clinical concern exists regarding further deterioration or the potential need for urgent surgery to

improve recovery, an MRI scan should be organised and reported locally. The only exception will be if the local MRI scanner is closed as this condition MUST displace other planned MRI scans. If the local scanner is closed then the patient must be referred urgently. Clinical appraisal will determine the levels of the imaging but if in doubt, a whole spine MRI should be performed. Referral will be based on the MRI findings and if doubt exists, these should be transferred to the Spinal Hub by an image transfer system and a referral made. The duration, speed of onset and any recent deterioration and the suspected spinal pathology will dictate the speed of the emergency referral.

Spinal tumour

Neurological deficit is considered above. MSCC cases should be managed in line with NICE Guidance (CG75) and Service Specification D14. For patients with severe pain, MRI as soon as possible – this could be first thing next day if there is no neurological deficit. Referral with images transferred to the MSCC On-Call Service will include assessment from an Oncologist. It is helpful if a CT chest, abdomen and pelvis has been performed in the case of unknown primary or if recent staging has not been performed. Primary Spinal Tumours should be managed in accordance with current Service Specifications D14 and B12.

Spinal infection

Spinal infection is very common and can present with a long or short history of back pain, with or without septicaemia and with or without neurological deficit. Unless the patient is clinically unwell, antibiotics should be withheld until an organism is identified (or at least blood cultures and biopsy are performed). The diagnosis is usually made on MRI and referral should then be made to the Spinal On-Call Service with images linked by an image transfer system. Occasionally, the patient presents with neurological deficit (see above). If the patient is septicaemic, urgent treatment with broad spectrum antibiotics is recommended. A high index of suspicion for this condition is required as diagnosis is often delayed if there is no clinical history obtainable from the unwell patient.

Spinal trauma

Spinal trauma without spinal cord injury should follow ATLS principles. Osteoporotic spinal fractures do not need referring acutely unless there is neurological deficit (see above). All non-osteoporotic fractures should have a CT scan with coronal and sagittal reformats. If there is a cervical spine fracture or dislocation, plain radiographs, CT or MRI is required of the thoracic and lumbar spine. Isolated thoracic or lumbar fractures should have a low threshold for CT of the rest of the spine. Cervical dislocations or subluxations usually require urgent reduction even without neurological

deficit so immediate referral is advised. A bi-facetal cervical dislocation with spinal cord injury is an emergency mandating reduction within four hours. Other fractures should be referred for advice and the patient immobilised on flat bed rest until advice is received. For cervical spine injuries a hard collar is sufficient in a hospital environment and tape/sandbags can be removed. Documented four hourly neurological observations are advised and neurological deterioration should prompt immediate referral and MRI scan.

Osteoporotic fractures in the elderly including odontoid peg fractures where conservative management has been decided should be considered for management by general medicine with spinal input as many of these patients develop complex medical problems.

Appendix 5: Assessment Tool for RSN

Criteria	Evidence	Assessment			Identified Gaps	Comments
		R	A	G		
Define hospitals within RSN	List of hospitals indicating spinal hub or partner					
Confirm 24/7 rota in spinal	Rota frequency in spinal hub(s) and confirm 24/7 + on-call in any partner hospitals and level of cover					
WTE Spinal Consultants	List Spinal Consultants and PA allocation for each hospital in RSN					
Details of surgery performed in each hospital	For hub(s) and partner hospitals confirm specialised / non-specialised / paediatric spinal surgery					
AQP	Confirm AQP providers and which hospitals they are operating from					
Waiting times	Average time to outpatients by each hospital / AQP. Number of 18, 26,52 week breaches for each provider					
MRI	Confirm written agreement from each partner hospital to interrupt MRI lists for emergency spinal scans for suspected cauda equina syndrome or spinal cord compression and written procedures for performing urgent MRI scans at times other than when the local MRI scanning facility is operational					

	(i.e. out of hours.)					
Electronic Referral System	Introduce electronic referral system in each spinal hub and any other hospital offering an on-call service for all non-GP referrals					
Repatriation	Confirm agreement at Medical Director level regarding repatriation back to local hospital with associated penalties at 48 hours					
British Spine Registry (BSR)	Confirm use of the BSR for all non-injection procedures. Confirm number of WTE BSR data managers					
Local MDT	Confirm active local spinal MDT when specialised spinal surgery is being performed. Must include a radiologist and must be minuted					
Regional Spinal Meeting	Confirm dates and attendance at Regional Spinal Meeting which must for the first year be every 3 months and then at least 4 monthly after that					
RSN Manager and Clinical Lead	Confirm presence of a Spinal RSN Manager and a Clinical Lead (0.5PAs)					
Risk Management	Evidence of recording all risk management issues in the RSN Risk Register: • Deaths • Serious Untoward Incidents • Never Events					

	• Duties of Candour • Root Cause Analysis • Risk Management issues					