COMMISSIONING SPINAL SERVICES – GETTING THE SERVICE BACK ON TRACK

A GUIDE FOR COMMISSIONERS OF SPINAL SERVICES

Contents

Foreword 1

1. Executive Summary 3

2. Summary of recommendations 5

3. Introduction 12

4. Patient Need groups 14

4.1 Non-specific spinal pain (non-specialised care) 15

4.2 Radicular pain (cervical and lumbar) 20

4.3 Potentially serious pathology (threatened spinal cord) 21

4.3.1 Cauda Equina Syndrome 21

4.3.2 Spinal (Extradural) Metastases 22

4.3.3 Spinal infection 24

4.3.4 Primary extra-dural spinal tumours of osseo-ligamentous and neurological origin 25

4.3.5 Primary intra-dural spinal tumours 26

4.4 Spinal deformity (specialised care) 27

4.4.1 Paediatric 27

4.4.2 Adult 29

4.5 Spinal trauma (specialised care) 31

4.6 Other Spinal pathologies (Specialised care): 33

4.6.1 Inflammatory Back Pain 33

4.6.2 Spinal Fragility Fractures 33

4.6.3 Coccydinia 35

5. Other national issues 36

5.1 Overview 36

5.2 Research and Development 36

5.3 NICE Quality Standards 38

5.4 Networks 39

5.5 Outcome Measures 43

5.6 Imaging and Image Transfer 44

5.7 Workforce and training issues 46

5.7.1 Workforce issues 46

5.7.2 Training for spinal surgery 47

5.8 PbR/National Tariff 49

Bibliography 52

List of footnotes 53

Abbreviations 56

Glossary 57

Appendices 62

Appendix1 – Spinal Taskforce membership and organisational representation 62

Appendix 2 – Terms of Reference for the National Review of Spinal Surgery Provision undertaken by the Department of Health Spinal Task Force – updated June 2011 63

Appendix 3 – Spinal Taskforce submission to the NICE Quality Standards Engagement Exercise 65

Appendix 4 – Review of Spinal Infection based on NICE Quality Standards Engagement Exercise Format 68

Appendix 5 – Injection Therapies for Lumbar Spine Conditions 77

Appendix 6 – Definition of needs groups 79

Appendix 7 – Further detail potentially serious pathology 85

Appendix 8 – Spinal Deformity 87

Appendix 9 – Providers of Spinal Surgery in Engand 88

Appendix 10 – SHA Cluster Profiles 94

Activity Profile – Non-specialist Surgery category (NS-S) 94

Activity Profile – Non-specialist Non-surgical category (NS-NS) 99

Activity Profile – Specialised Surgery Extra-Dural Category (SS-ED) 108

Activity profile – All Spinal 113

Appendix 11 – National Data Review 123

Foreword

The National Spinal Taskforce (a group commissioned by Sir Bruce Keogh to advise on the commissioning of spinal services[1]) includes representatives from The British Orthopaedic Association (and associated Spinal Societies including: The British Association of Spine Surgeons, The British Scoliosis Society and The Society for Back Pain Research), The Society of British Neurological Surgeons, The British Pain Society, British Society of Skeletal Radiologists, The Royal College of Surgeons, The Chartered Society of Physiotherapy, The Specialist Orthopaedic Alliance, The Department of Health, Public Health, Specialised Commissioners and the Orthopaedic Expert Working Group that advises on Payment by Results.

In March 2010 the Spinal Taskforce produced its first report, (DH Gateway Ref.13885[2]) aimed at supporting commissioners in the delivery of high quality spinal services while also meeting the 18 week referral to treatment waiting time (RTT) target. The decision by Professor Sir Bruce Keogh in April 2011, to support this new piece of work by the Spinal Taskforce has enabled it to formulate advice aimed at guiding the NHS and the new NHS Commissioning Board in the creation of nationally coordinated specialised commissioning for specialist spinal services and to guide local commissioners in managing the more common spinal problems.

The eighteen week target resulted in a rising demand for orthopaedic services in general and increased the already long waiting time for patients with spinal conditions. This rising demand has been accompanied by contracting provision as small scale providers have withdrawn from spinal services. In 2010 only 55% of providers and 45% of commissioners managed to meet the 18 week target time for treatment in orthopaedics as a whole. Indeed the underperformance of orthopaedic service targets, despite an increase in activity, continued to be obscured by overall Trust target achievements from activity in other specialties. Although neurosurgery was able to meet the target, it was difficult to separate the numbers undergoing spinal surgery from the overall figures for neurosurgery. Many providers re-organised local assessment and treatment services, and restricted referrals. In this way they managed to meet the targets, though this was a situation that did not look sustainable in the longer term. This has been borne out by the rise in the numbers of patients waiting for spinal surgery which will lead to an increase in the numbers of patients whose condition becomes chronic due to delays in treatment.

The Health and Social Care Act 2012 includes a series of factors for the Secretary of State to take into account when deciding which services should be directly commissioned by the NHS Commissioning Board. These relate to the number of individuals who require the service or facility, the costs associated with providing the service, the number of specialist centres and clinicians able to provide the service and the financial implications for GP commissioning consortia if they were required to arrange the provision of the service. The Specialised Services National Definitions Set will form the solid basis for the services which the Board will commission and these will be set out in regulations.

As mentioned in the foreword to our first report, there are many issues surrounding the organisation of spinal services that need to be addressed to ensure that the right range of services are available for patients and that these services are clinically robust and easily accessible for both elective and emergency care. In particular there is a need to address geographic 'black spots' where services are simply unavailable locally and to ensure that the flow of patients between primary, acute and tertiary care is appropriate and effective.

[1] See Appendix 1 for Taskforce membership and Appendix 2 for Terms of Reference
[2] http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_114528

There is also an outstanding need to improve the quality and provision of services for patients with lumbar back pain to ensure that the NICE guidelines (CG88) on lumbar back pain are implemented to support the large number of patients who are suffering from back conditions but for whom surgery is not the appropriate course of treatment. Access rates for patients with back pain (age standardised per 100,000 population) have risen for 231 to 295 between 2005/6 and 2009/2010. Low back pain is the leading cause of disability in the world and a major cause of other medical problems including depression and substance misuse. Access rates have risen for all spinal needs groups during this time, those with radicular pain rising from 74 to121 per 100,000 population. Hospital Episode Statistics (HES) data for 2010/2011 have indicated that 76,304 interventional procedures were undertaken for lumbar radicular pain. Of these 11,674 decompressions were carried out for Spinal Stenosis. Delays in treatment only lead to chronicity and a third of patients with chronic low back pain i.e. > 12 weeks duration have predominantly neuropathic pain.

In the process of preparation of this report it has become apparent that although NICE guidance is available for many of the conditions considered, there remain significant deficiencies e.g. for radicular pain, and spinal infection. Where this is the case, consensus opinion of the Taskforce has been used in formulating recommendations. A request has been submitted to NICE to consider the preparation of a Quality Standard for the management of radicular pain. Although this was not selected by the Department of Health to be included in the final list of topics the Taskforce, as a stakeholder organisation, is of the opinion that its views should be taken into consideration, in any review related to spinal conditions.

The report also notes the limiting effect of a number of significant issues, which commissioners will need to address, for example problems relating to specific workforce shortages such as the lack of clinical psychologists, and neurophysiologists, the reduction in senior level physiotherapy posts, significant issues affecting image transfer, especially in emergency situations and the national shortfall in rehabilitation beds and services.

This document takes a detailed look at the national picture in terms of a number of specific groups of patients and procedures[3], including those who require treatment, where they are being treated and by whom. Commissioners will need to be aware of local and national trends and analyse the way the care provided by orthopaedic spinal surgeons and neurosurgeons and their training overlaps in order to plan better care pathways and clinical networks to support service delivery and development.

I very much hope that the recommendations in this guide will help commissioners at all levels to improve both the current state and the future form of spinal services in England.

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British Orthopaedic Association
Chair of the Spinal Taskforce

[3] See Appendix 3 for the detail behind these definitions

1. EXECUTIVE SUMMARY

This guide lays down recommendations for both commissioners (both local and those in the NHS Commissioning Board) and providers of spinal services. This has been developed to assist in the commissioning of local and regional networks of patient care for the six principal groups of spinal disease and builds on the principals outlined in the March 2010 report[4].

The "Top Ten" recommendations are those that the Taskforce feel most strongly and urgently need to be implemented by current and future commissioners and providers of spinal services.

It is impossible to separate training and manpower planning from service provision. The creation of the UKSSB (UK Spinal Services Board) and the British Spine Registry set up by the British Association of Spine Surgeons (BASS) will provide a focus for a common approach to training and the production of audited data, outcome measures, CQUINS and national policy for the future development of the specialty of spine surgery.

The guide also outlines where further research is urgently needed to establish the efficiency of certain interventions on the spine and the caution to be used in the prescription of opioid medication for those patients with non-cancerous /acute pain. The Taskforce recommends that a spinal service be accessed by a single point of care under the leadership of a Consultant Spinal Surgeon with regular multi disciplinary team patient assessment.

The extensive review of FCE[5] data for 2011illustrates the extent of activity and geographical spread of service provision. It is imperative that commissioners endeavour to establish services in the areas that our data demonstrates are currently poorly supported.

Top ten recommendations

1. NETWORKS: All commissioners of spinal services should ensure that comprehensive spinal networks are established to facilitate integrated care pathways. Clinical commissioning groups and specialist commissioning must interface along these pathways. The networks for general spinal work (including primary care) must be co-ordinated with the individual and sometimes differing networks for trauma and cancer.

2. GOVERNANCE: All providers of spinal services (including the private/third sector) irrespective of whether commissioned at CCG or specialised commissioning level should be subject to the same clinical governance arrangements. All providers should contribute to a National Spinal Registry (or other communicating database) The NHSLA (and any related organisations) should publish an annual audit of any adverse consequences of the management of spinal conditions.

3. NON- SPECIFIC SPINAL PAIN: Commissioners should ensure a properly constructed Combined Physical and Psychological programme is commissioned (Fig 4.1 box 3). This is the most serious gap in current services and should be urgently addressed. The type of programme recommended by NICE is available in their guideline CG88 .

4. RADICULAR PAIN: If radicular symptoms predominate at any stage, management as defined in section 4.2 is recommended. Commissioners should ensure that appropriate levels of service provision and pathways are

[4] http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_114528
[5] Finished Consultant Episode
[6] http://www.nice.org.uk/nicemedia/pdf/CG88fullguideline.pdf
[7] http://www.nice.org.uk/nicemedia/pdf/CG88CostReport.pdf

in place to enable timely sound clinical decision making. NICE should ensure that a Quality Standard for the management of lumbar radicular pain is produced to complement the recently published NICE Guidance concerning the management of low back pain.

5. CAUDA EQUINA SYNDROME AND SPINAL INFECTION: Commissioners should ensure that specific service provision and pathways are in place for these conditions and should establish that there is a nominated regional centre which holds a register of these cases.

6. SPINAL (EXTRADURAL) METASTASES: Commissioners should review provision of services to manage MSCC, in line with the measures detailed in the NICE Guidance and Acute Oncology Measures. In particular this should include geographical coordination of availability of appropriate imaging (MRI and CT), and on call Spinal Surgeons and Oncologists. National Cancer Peer Review audits to enhance service evolution for this emergent patient population should be supported.

7. PRIMARY EXTRADURAL SPINAL TUMOURS OF OSSEO-LIGAMENTOUS AND NEUROLOGICAL ORIGIN: This service should be commissioned by the National Commissioning Board in line with extant NICE guidance for primary bone tumours. It should be noted that this is currently under review by the Clinical Reference Group advising the NHS Commissioning Board on specialised commissioning for spinal services.

8. SPINAL TRAUMA: trauma centres and units should ensure that spinal column injury without neurological deficit is included in the rehabilitation pathway being established under the major trauma networks.

9. IMAGING: Commissioners should ensure that providers are connected to the Image Exchange Portal (IEP). They should ensure that agreed protocols exist to efficiently ensure the delivery and /or receipt of imaging and radiology reports relevant to both the elective and emergency transfer of patients.

10. ADMINISTRATION: Commissioners should fund the establishment of clinical spinal emergency coordinators.

2. SUMMARY OF RECOMMENDATIONS

Non-specific spinal pain (non-specialised care)

- Commissioners should adopt and commission a back pain pathway in line with the proposed pathway shown in figure 4.1. This is adapted from the NICE guideline and provides a good example of how this may be implemented[8]. Commissioners should ensure that properly constructed Combined Physical and Psychological programmes are commissioned (Fig 4.1 box 3). This is the most serious gap in current service provision and should be addressed urgently. The type of programme recommended by NICE is available in their guideline CG88. There are costs attached to introducing these services but the consequent reduction in other costs, particularly injection therapy and inappropriate referrals, would balance out this expenditure. Further detail regarding the cost implications was developed by NICE as a part of the development of CG88[9].
- Commissioners should ensure, in conjunction with their local providers, that a minimum data set is agreed for inclusion in all Primary Care referrals. This is a low cost recommendation but the savings in terms of improved referrals could be significant.
- Commissioners should adopt the guidance laid out in Appendix 5 in relation to the provision of injection therapy.

Radicular pain (cervical and lumbar)

- Commissioning groups both local and specialist should ensure that appropriate safe levels of service provision, including networks, are in place to enable sound clinical decision making.

Potentially serious pathology (threatened spinal cord) - Cauda Equina Syndrome

- Rehabilitation is extremely important in patients with bowel or bladder disability secondary to a Cauda Equina syndrome. Frequently this rehabilitation is overlooked and significant distress, with potential restriction of employment and social integration, is unnecessarily placed on these patients. Commissioners should ensure that there is an appropriate link from the treating centres to this specialist advice.
- The Taskforce recommends that the NHSLA produces an annual data set concerning the spine outlining the causes of litigation and their costs[10].

Spinal (Extradural) Metastases

- The NHSLA (and any and all related organisations) should publish comprehensive audit data on this area if improvements are to be appropriately targeted and managed.
- Commissioners should review provision of services to manage MSCC, in line with the measures detailed in the NICE Guidance and Acute Oncology Measures. In particular this should include:
    - Geographical coordination of availability of appropriate imaging (MRI and CT), and on call Spinal Surgeons and Oncologists. The change related to improved management and collaboration and not investment in infrastructure.
    - Provision of an emergency spinal coordinator (role including MSCC) in spinal surgery centres. There is a cost attached to this recommendation, but this relates to a small number of posts at all central hub providers.

[8] http://www.nice.org.uk/CG88
[9] http://www.nice.org.uk/nicemedia/pdf/CG88CostReport.pdf
[10] Quraishi,T.C.et al ,Malpractice litigation and the Spine: NHS perspectiveon235 successful claims in England.Spine21 (Suppl.2) ,S196-S199,2012.

- Encourage National Cancer Peer Review audits to enhance service evolution for this emergent patient population.

- Interventional radiology (for biopsy, percutaneous cement reinforcement and embolisation) should be available in all cancer networks, normally alongside spinal surgical services (to ensure appropriate management of adverse events such as cement cord compression).
- Commissioners should have in place services for the rehabilitation of patients with neurological compromise. These should be multidisciplinary.
- Larger centres should appoint a spinal emergency coordinator to support the regional Network.

Spinal Infection

- Specialised commissioners should ensure that networks are in place for the management and provision of treatment for spinal infection. The litigation costs arising from poorly managed spinal infection are significant and outweigh the cost of improving this service.
- Local and specialised commissioners should ensure that they commission services from centres where Multi-disciplinary discussion, including spinal surgeons, occurs before any treatment of suspected spinal infection is commenced. These services are available in many areas and the process of implementing the move to specialised commissioning through NHS Commissioning Board is likely to drive forward change in areas that are poorly served.
- Specialised commissioners should ensure there is a nominated regional centre that keeps a register of spinal infection. The results of treatment should be audited annually and adverse outcomes analysed and presented to the parties involved.
- Commissioners should ensure that providers establish and follow a defined sound and clinical pathway when spinal infection is suspected. This should include:
    - MRI scans of the spine, unless contraindicated.
    - A low threshold for biopsy in suspected spinal infection unless specifically contraindicated.
    - Antibiotics should not be started until every possible source of a causative organism has been cultured. If a patient is septicaemic it may be appropriate to start antibiotics without a spinal biopsy but this should only be done in liaison with the spinal unit who would ultimately be responsible for any further intervention.

Primary extradural spinal tumours of osseo-ligamentous and neurological origin

- Treatment for these tumours (both benign and malignant) should be commissioned in specialist centres.
- This service should be commissioned by the NHS Commissioning Board in line with extant NICE guidance for primary bone tumours.
- Provision of this service should be subject to interval peer review and national comparative audit of outcome by the specialist spinal societies using the data recorded in the British Spine Registry.

Spinal deformity (specialised care)

PAEDIATRIC

- The following terminology should be used for commissioning paediatric spinal deformity surgery:
    - 'Type I' paediatric spinal deformity surgery is defined as instrumented spinal deformity correction in ambulant, otherwise healthy children aged 10 to 18 years.
    - 'Type II' paediatric spinal deformity surgery includes younger children and those with associated medical problems.
- Specialised commissioners should ensure that centres performing paediatric spinal deformity surgery should be designated as either performing 'Type I' or 'All' (Type I and II) paediatric spinal deformity surgery and need to meet the criteria for staffing and the provision of appropriate facilities.
- Specialised commissioners should ensure that the appropriate number of paediatric intensive care beds and spinal cord monitoring is available, as these are recognised as the main causes of cancellation or last minute cancellation of cases causing distress to patients and their families and the waste of expensive resources.

ADULT

- Commissioners should encourage an MDT approach to decision making for adult spinal deformity surgery.
- Complications and patient reported outcome measures (PROMS) should be reported annually from all Spinal Centres performing adult spinal deformity surgery.

Spinal trauma (specialised care)

- Specialised commissioners should ensure that patients with spinal injuries, in particular those with spinal cord injuries are being managed according to established Regional Trauma Network pathways.
- Specialised and local commissioners should ensure that all elements of the Trauma Network have appropriate training in the assessment and management of the unstable spine, threatened spinal cord, and paralysis.
- Specialised and local commissioners should ensure with that in line with agreed Trauma Networks, every hospital receiving trauma cases has a defined relationship with the appropriate spinal cord injury centre to provide advice, outreach care and education in the needs and immediate management of these vulnerable patients.
- Commissioners should ensure that Trauma Centres and Units have established rehabilitation pathways for patients as a part of the major trauma networks.

Inflammatory Back Pain

- Local commissioners should ensure that all patients with inflammatory back pain should be referred to a Rheumatologist.

Spinal Fragility Fractures

- In light of demographic changes, local commissioners should ensure that services include metabolic and bone density assessment. This equipment is widely available in many hospitals and dedicated clinics can provide access to assessment where equipment and expertise are not available in the community.
- Specialist provision of services for insufficiency osteoporotic spine fractures should be established. This

includes medication and interventional procedures, which are already available in many places across the country.

Coccydinia

- Coccygectomy should be reserved for the small group of patients who have intrusive symptoms despite optimal conservative management and limited or no response to injection and MUA.

Research and Development

- Commissioners should ensure that surgical services are only commissioned from units able to provide prospective outcome assessment of surgical procedures.
- Commissioners should ensure that each spinal network is involved in recruiting to at least one NIHR sponsored research project at all times.
- Commissioners should ensure that providers have the appropriate infrastructure to collect and publish outcome data for spinal interventions.
- Commissioners should ensure that Spinal Surgery Networks submit an annual audit report.

Quality Standards

- Local and specialised commissioners should ensure that contracts with spinal surgery providers include appropriate quality standards that include measures related to timely treatment.

Components of clinical network

- Local and specialised commissioners should ensure that supra-regional, regional and local spinal networks are in place taking account of the above guidance.
- Local and specialised commissioners should ensure that all providers of spinal services (including the private/third sector) that they commission from, irrespective of whether they are commissioned at CCG or specialist commissioning level should be part of the local clinical network.
- Local and specialised commissioners should be responsible for commissioning the appropriate networks – ones that can deliver safe (appropriately audited) and sustainable services for all patient groups to ensure good outcomes.
- Review of the organisation and delivery of provision of spinal services should occur annually.

Outcome Measures

- Local and specialised commissioners should ensure that centres collect operative data including complications, diagnostic and PROMs data that allow benchmarking in comparison of services across the country.

Imaging and Image Transfer

- Local and specialised commissioners should ensure they procure spinal services from organisations able to demonstrate compliance with the recommendations to providers below and should be prepared to review such procurement when non-compliance is reported.
- Commissioners should ensure that providers who are not currently connected to IEP must ensure that they are linked to the system.

- Commissioners should ensure that providers agree protocols and procedures to be followed by their staff to efficiently ensure the delivery and/or receipt of imaging and radiology reports relevant to both the elective and emergency transfer of patients under their care. Protocols will define the responsibilities of both clinical and radiological staff and must support 24/7 transfer. All organisations likely to have to send their imaging to another centre should proactively produce such protocols ensuring that both parties retain copies of the original and any updated documentation, and that all relevant staff understand their responsibilities.
- Commissioners should ensure that providers should make available home viewing facilities for spinal imaging for consultant surgical staff. This would not require additional computer equipment but rather the provision of access to services that most trusts already provide.

Workforce issue - Training for spinal surgery

- Specialised commissioners should ensure the establishment of adequate provision and training of acute spinal coordinators and related posts.
- Local and specialised commissioners should ensure that there is a timetable for audit and governance between primary and secondary care across the pathway and across organisations within the network. Trusts should provide one day per month for shared training and audit.
- Local and specialised commissioners should recognise in contracts that technical and professional development has resulted in new surgical solutions and that the costs of multi-consultant working will need to be taken into consideration.
- Commissioners should ensure that providers recognise the need for fully trained spinal surgeons and this should be defined by assessed competence rather than numbers of procedures undertaken alone.
- Commissioners and providers should ensure that spinal surgeons are able to provide a full range of decompression and basic reconstructive techniques at completion of training with some subspecialty module training. By the time they are appointed all consultants should be competent in the assessment, management and surgery of 80-90% of spinal emergency presentations.
- Neurosurgical and Orthopaedic Spinal Surgeons within the same health economy should work closely together to provide an on-call service and improve commissioning arrangements.
- Commissioners should ensure that providers ensure that newly appointed consultants are mentored and when necessary supported by senior colleagues when first undertaking more complex procedures. Trusts should recognise these requirements. It may be necessary to consider proleptic appointments of consultants for specific surgical areas.
- Commissioners should ensure that providers in Spinal Surgical centres should consider appointing acute spinal coordinators and other suitably trained paramedical support staff or if not available make proleptic appointments of paramedical staff to train in spinal surgery support roles.

PbR/National Tariff

- The NHS Commissioning Board should review the Trusts defined as Specialised Spinal Centres based on which Trusts perform procedures considered specialised as defined by a review of the Specialised Spinal Services National Definition Set. It should be noted that this may become an aspect of the CRG's work.

Recommendations for Department of Health, NHS, NHS Commissioning Board and affiliated bodies

Non-specific spinal pain (non-specialised care)

In view of the many patients involved and the significant numbers of injections undertaken in the past, the role of facet injections in non-specific low back pain should be the subject of an appropriately sized and constructed randomised controlled trial on an urgent basis. This should include assessment of pain; functional outcome and an economic evaluation over a follow up period of two years.

Radicular pain (cervical and lumbar)

- NICE should ensure that a Quality Standard, to include the management of lumbar radicular pain, is produced to complement the recently published Guidance concerning the management of low back pain (CG88).

Spinal deformity (specialised care)

- The Department of Health, and thereafter MONITOR and the NHS Commissioning Board should review the payment structure for these procedures, as this service is currently not subject to Payment by Results. It is suggested that there should be three surgical groups identified for different payments for instrumented paediatric spinal deformity surgery:
    - Lowest payment: Surgery in Type I deformity – usually adolescent idiopathic scoliosis.
    - Intermediate payment: Posterior surgery in Type II deformity.
    - Highest payment: Combined anterior and posterior surgery in Type II deformity.
- The Department of Health should commission a review of the coding structure for these procedures, as adult spinal deformity surgery is increasing in demand due to an aging population and surgery is technically demanding with the potential for high complication rates. A coding definition of the more complex surgery in patients with adult deformity is proposed:
    - OPCS code indicating instrumented spinal deformity correction.
    - More than 2 levels of the spine.
    - An ICD-10 code for a spinal deformity diagnosis.

  With an additional code for 'anterior vertebral osteotomy' which is not in the current OPCS codes, this would allow adult spinal deformity surgery to be divided into:
    - Type I: Posterior instrumented scoliosis correction +/- decompression(s).
    - Type II: Posterior and/or anterior instrumented scoliosis correction +/- decompressions OR Posterior instrumented scoliosis correction + vertebral body osteotomies +/- decompression(s).

Research and Development

- NHSLA to deliver annual reports of spine related litigation[11].
- Comprehensive Local Research Network (CLRN) or their successor to consider special issues surrounding

[11] Quraishi,T.C.et al, Malpractice Litigation and the Spine: NHS perspective on 235 successful claims in England.Spine21 (Suppl.2) ,S196-S199,2012.

introduction of industry studies of new spine technology.

- The Department of Health should ensure that NIHR and the new Academic Health Science Networks are receptive to the introduction of new spinal technology with input from the Spinal Surgical Societies, relevant Statutory Bodies (MHRA, NICE MTAC) and ABHI Spinal group to allow appropriate and timely innovation.
- The Research Networks are alert to providing support staff for recruitment to clinical studies in spinal disorders sponsored by implant companies.
- NIHR to consider special issues surrounding introduction of industry studies of new spine technology.

Innovations

- The Department of Health, and thereafter the NHS Commissioning Board, should encourage the use of the British Spine Registry established in May 2012.

PbR/National Tariff

- The Department of Health, and thereafter MONITOR and the NHS Commissioning Board, should ensure that the Specialised Spinal Top-up is added to the HRGs that contain these specialised procedures.
- The Department of Health should make use of Patient Level Costing Information System data to inform the setting of the tariff for spinal surgical procedures. It is noted that this is beginning as a part of a project led by the PbR team working with key musculoskeletal stakeholders in this area – a development that is welcome and timely.
- The Orthopaedic Expert Working Group and the NHS Information Centre should review the Spinal OPCS codes and make recommendations for retirement of obsolete and duplicate codes to allow more accurate coding and improve HES data quality.
- The NHS Information Centre needs to produce changes to the Local Payment Grouper for 2013/14 to allow flagging of the specialised procedures performed in the designated hospitals.

Recommendations for professional bodies

Workforce issues - Training for spinal surgery

- The relevant professional bodies and Health Education England should consider issues around training and education and agree plans for clinicians to share training and education.
- The relevant professional bodies should ensure that pre-CCT spinal training is provided. For this to be adequate spinal surgery trainees should do a 48 hour working week (including on-call).
- The relevant professional bodies should require appropriate additional training at post-CCT fellowship level and a posting in a recognised centre (either in the UK or overseas) for a second fellowship year should be considered.
- The indirect costs associated with training will also require recognition and there should a discussion regarding separate funding from top-sliced monies.

3. INTRODUCTION

The National Spinal Review builds on the work outlined in the Spinal Taskforce's first report published in March 2010, which was aimed at supporting commissioners in delivering high quality spinal services while also meeting the 18 week RTT. Indeed, the report[12] included specific guidance on meeting both the waiting time for spinal services generally and the management of deformity services.

The issue of the 18 week referral to treatment waiting time operational standard remains relevant as the Operating Framework for 2012/13 stipulates that this standard should be achieved in each specialty by every organisation and includes a responsibility to ensure patients understand that they have a right to treatment within 18 weeks of referral. This right is likely to lead to more litigation and ensure that the 18 week wait remains important.

The purpose of the Review is to identify the current provision and future need for specialised and non-specialised spinal surgery and to identify where current practice is at odds with published guidance. It will identify the geographical variation in current service provision and the inequalities of access to specialised surgery including a review of recommended models of service provision. The report contains an overview of national level data and the appendices include four SHA Cluster Profiles highlighting key data such as waiting times.

There are many issues dealt with in this report which affect the provision of spinal services and that make it a priority to improve the way services are planned and provided.

They include:

- Rapidly rising demand – for example in 2006/7 there were 151,118 FCEs in all categories of spinal intervention, but by 2010/11 this had risen to 236,081. This pattern is replicated across the spectrum of spinal interventions.
- Changes in the geographical pattern of provision as surgeons retire and smaller units close and more surgeons are appointed to larger units is resulting in an unequal distribution of spinal service capacity. There is a need for more constructive workforce succession planning.
- The rise in the incidence of litigation relating to the treatment of the 'threatened spinal cord', as illustrated in those patients with Cauda Equina compression and spinal infection, is reflected in rising costs of indemnity for Providers and Clinicians.
- Insufficient paediatric intensive care to support rising demand for paediatric deformity surgery.
- Variable provision of theatre capacity or unavailability of appropriate clinical support staff for example technical support responsible for monitoring spinal cord function during surgery.
- A need to focus certain non-surgical treatments on those patients for whom surgical treatment is inappropriate.
- A need to provide clear guidance on pathways and referral criteria.
- Insufficient tariff to cover the cost of the most complex spinal procedures affecting many providers.

[12] http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_114528
http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_114524.pdf
http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_114525.pdf
http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_114522.pdf

- The importance of providing combined physical and psychological programmes for those with non-specific lumbar low back pain.
- The need for guidance and governance on who can undertake a particular procedure and to whom patients should be referred i.e. those patients deemed to be at risk of becoming chronic being referred to the most appropriately skilled person.
- The need to develop local and regional /geographical clinical networks.
- A need to formalise patterns of clinical leadership across networks.

The Health and Social Care Act 2012 sets out the Government's intention that from 1st April 2013 the NHS Commissioning Board (NHSCB) will directly commission a number of services including those specialised services which are currently commissioned at both national and regional level. The SSNDS will form the solid basis for the services that the NHSCB will directly commission and the final list of services will be prescribed in regulation.

There are significant issues relating to the coding list that accompanies the definition set but it is hoped that a project, commissioned by the Transition team for the commissioning board to create an algorithm that can pick up specialised activity from coding, will help to address this issue.

Raising the quality of outcomes and protecting the service provision, improving governance will lead to substantial savings for the NHS, both in terms of a reduction in costly complications, a quicker return to productive life for patients and potentially large savings in reduced litigation costs.

4. PATIENT NEED GROUPS

As outlined in the previous report by the Taskforce, it is necessary to understand the type of patients who are receiving treatment for spinal conditions and where and how they are accessing this treatment. These patient need groups are described later in this chapter. It has also been considered helpful to cluster types of treatment into a number of broad categories, which indicate which area of specialist care can provide the service. These are:

Patient Group	HES Procedure Code Group	Clinicians with principal responsibility
Non-specific spinal pain	Non specialist non-surgical (NS-NS) & Non specialist surgical (NS-S)	GPs, Nurse Practitioners, Physiotherapists, Pain management services, Psychologists, Rheumatologists, Appropriately trained Spinal Surgeons can treat these patients.*
Radicular pain (cervical and lumbar)	Non specialist- non-surgical (NS-NS) & Non specialist- surgical (NS-S)	GPs Nurse Practitioners, Physiotherapists, Pain management services and Rheumatologists can treat these patients but they may also require referral for a spinal surgical opinion. Musculoskeletal and Neuroradiologists may undertake interventional procedures.
Potentially serious pathology	Specialist surgical -Intradural (SS-ID) & Specialist surgical –Extradural (SS-ED) & Non specialist -surgical (NS-S)	Appropriately trained spinal surgeons can treat these patients*.
Spinal deformity	Specialist surgical –Extradural (SS-ED)	Appropriately trained spinal Orthopaedic surgeons can manage these patients.
Spinal trauma & with/without spinal cord injury	Specialist surgical -Intradural (SS-ID) & Specialist surgical –Extradural (SS-ED) & Non specialist-surgical (NS-S)	These patients can be seen by appropriately trained spinal surgeons;* Spinal cord injury patients being referred/admitted to a spinal cord injury treatment centre within 24hrs unless there are other serious injuries.

Other spinal pathologies	Specialist surgical –Extradural (SS-ED) Non specialist- Non-surgical (NS-NS)	These patients may be seen by appropriately trained spinal surgeons but some may need to be seen by Rheumatologists and metabolic physicians.
	Pain -Neuro modulation (P-NM)	Neurosurgeons and specialist pain management services

**-this includes both spinal orthopaedic and neurosurgeons.*

Commissioners should note that both specialist orthopaedic and neurosurgeons, who concentrate mainly on the spine, can provide these services. When combined these patient groups and procedure descriptions provide a basis for analysing activity and understanding of the underlying trends affecting the provision of spinal services. This should be viewed in relation to appendix 6 which lists the underlying codes that describe these groups.

4.1 NON-SPECIFIC SPINAL PAIN (NON-SPECIALISED CARE)

BACKGROUND

The largest group of patients are those with non-specific spinal pain. Many of these patients benefit from reassurance, advice about exercise, the use of non-opioid analgesia and psychosocial support. For low back pain between 6 weeks and 1 year in duration, the NICE Clinical Guideline CG88 – "Early management of persistent non-specific low back pain"[13] should be followed.

In 2010/11 there were just over 71,400 FCEs with a diagnosis of back or radicular pain where no procedure was recorded, or where the patient received diagnostic imaging/diagnostic test as the main procedure. The majority of FCE's were emergency admissions (83%). The highest numbers of these patients were under the care of emergency department or general medicine consultants. The total cost to the NHS of £481 x 71,400.

In general conservative interventions for neck pain have not been studied in enough detail to assess efficacy or effectiveness. However, the recommended management is largely the same as for low back pain. Where the symptoms are neck dominant, including whiplash, optimal conservative management should take place, before investigation or surgical referral.

Advice and information, pharmacology, exercise and manual therapies can be useful, for reducing pain and disability.

If radicular symptoms are predominant at any stage, management as defined in section 4.2 is recommended.

COMMENT

SCREENING

A screening tool "STarT Back" is currently gaining credibility in its role in stratifying patients by their risk of chronicity[14]. The cost effectiveness of targeting treatment by "risk category" has also been demonstrated. A minimal intervention (advice and information) for the "low risk" group (26%) is recommended. The "medium risk" group (46%) should be managed by the core therapies outlined in NICE CG88 and the "high risk" group (28%) managed initially in a low intensity Combined Physical and Psychological programme (CPP) (Fig 4.1, Box 2).

[13] NICE clinical guidelines CG88: Low back pain: early management of persistent non-specific low back pain, May 2009. http://guidance.nice.org.uk/CG88
[14] Hill JC, Whitehurst DG, Lewis M et al. Comparison of stratified primary care management for low back pain with current best practice (STarT Back): a randomised controlled trial. The Lancet 2011; Oct29; 378: 1560-1571

NICE LBP GUIDELINES CG88

The Spinal Taskforce believes that widespread adoption of the NICE guidelines (CG88) may provide significant improvements for many patients and will also reduce unwarranted expenditure on inappropriate referrals to secondary care. The NICE guidelines included a detailed care pathway. The pathway in Figure 4.1 outlines the modified NICE LBP guidelines but also includes a pathway for radicular pain.

The key aspect of the pathway is to prevent chronicity by treating the patient actively at an early stage. The NICE guidelines (CG88) recommend a thorough biopsychosocial assessment, non-opioid analgesics and a choice of three core therapies after six weeks of symptoms (Fig 4.1 box 2) – manipulation, group exercises or acupuncture. For patients at high risk of persisting pain related disability (STarT Back Screening Tool), there is some recent evidence supporting, psychologically informed therapies (low intensity CPP) at this stage in the pathway. Providing access to all of these therapies should be considered a priority for primary care[15].

Patients who have completed an optimal range of less intensive therapies, but continue to seek healthcare should undergo further biopsychosocial assessment. Those with persistent back pain related disability should be offered a high intensity Combined Physical and Psychological programme (Fig 4.1 box 3).

Strong opioids (tramadol, buprenorphine, morphine, oxycodone and fentanyl) should not be prescribed for chronic low back pain with or without radicular pain. There is lack of evidence of effectiveness[16,17], and evidence of addiction and increased mortality from chronic use[18,19]. When symptoms persist for longer than 1 year the patient may require review by a pain specialist.

COMBINED PHYSICAL AND PSYCHOLOGICAL THERAPIES

For patients who are identified as "high risk" of developing persistent back pain related disability, there is consistent agreement internationally about the importance of providing treatment which combines physical and psychological therapies (CPP). The format of CPP interventions delivered in the UK vary widely, and operate under different names; Pain Management Programme, Functional Restoration Programme, Return to Work Programme etc. Regardless of name and format, there is a common approach. All CPPs are delivered in a group format and have a significant psychological component used in conjunction with activity, with the aim of helping patients manage their pain, optimise quality of life and reduce dependency of healthcare. However, there are many parts of the UK, which currently have no or limited access to these programmes, which should be more widely available.

There are costs attached to introducing these services but the consequent reduction in other costs, particularly injection therapy and inappropriate referrals, would balance out this expenditure. Further detail regarding the cost implications was developed by NICE as a part of developing CG88[20].

CPP's can be divided into two distinct groups.

- *Low intensity CPP*: these are appropriate early in the pathway alongside the core therapies recommended by NICE (Fig 4.1 box 2). These are typically unidisciplinary (but with links to psychology services), based on Cognitive Behavioural Principles and no more than 15 hours duration over several weeks.

[15] Lamb S, Hansen Z, Lall R, Castelnuovo E, Withers E, Nichols V, et al. Group cognitive behavioural treatment for low back pain in primary care: a randomised controlled trial and cost-effectiveness analysis. Lancet 2010.
[16] Martell BA et al. A systematic review: opioid treatment for chronic LBP: prevalence, efficacy and association with addiction. Ann Int Med 2007;146(2):116-27
[17] Okie S. A flood of opioids, a rising tide of deaths. New Eng Med J 2010;363:21
[18] Jamison R, Clark D. Opioid Medication Management. Clinician beware! Anesthesiology 2010;112:777-8
[19] http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_114528
[20] http://www.nice.org.uk/nicemedia/pdf/CG88CostReport.pdf

- *High intensity CPP:* these are appropriate later in the pathway (Fig 4.1 box 3), for people with complex disabling back pain that has been refractory to optimal treatment including the core therapies and the less intensive CPP. These are typically multidisciplinary and high intensity may be psychology led and delivered over 40 hours or more. In CG88, NICE found the best evidence was for programmes of at least 100 hours of exposure. This type of intensive programme may commonly be delivered on a full time basis over a three-week period, and can in some cases be residential (see appendix 3 of Organising Quality and Effective Spinal Services for Patients; gateway ref. 13885).

The high intensity CPP programmes are not available in most areas as yet, and this represents the single most serious gap in the provision of services for these patients at present.

INTERVENTIONAL PROCEDURES

It is only after completing an intensive CPP unsuccessfully that a patient should be considered either for interventional procedures such as surgery. Any referral for surgery must be made to a specialist spinal surgical service. All patients that receive interventional treatments, including pain interventions, must be followed up consistently and in a timely fashion. Injection therapy is not recommended for non-specific low back pain (Appendix 5). The number of injections carried out for back pain has continued to increase. For example, in 2010/11, 66, 947 facet joint injections were performed at a cost to the NHS of £38.16 Million. For patients with chronic spinal pain associated with disability, who are unsuited for or do not wish to consider invasive treatment, referral to a pain service should be considered. This is especially suitable for those in whom psychological factors play a significant role and require more detailed psychological evaluation and support.

It is crucial to point out here that there needs to be the earliest possible diagnosis to differentiate between non-specific spinal pain and the next group – those patients with radicular pain, for whom surgery or other interventions are a very successful and cost effective option.

CONSERVATIVE MANAGEMENT OF PAIN OF CERVICAL SPINE ORIGIN

In general conservative interventions for neck pain have not been studied in enough detail to assess efficacy or effectiveness. However, the recommended management is largely the same as for low back pain.

If the presentation is of myelopathy, or severe radicular arm pain with or without neurology, then early investigation by MRI and surgical referral is strongly recommended.

Where the symptoms are neck dominant, including whiplash, optimal conservative management should take place, before investigation or surgical referral. Advice and information, pharmacology, exercise and manual therapies can be useful for reducing pain and disability.

RECOMMENDATIONS

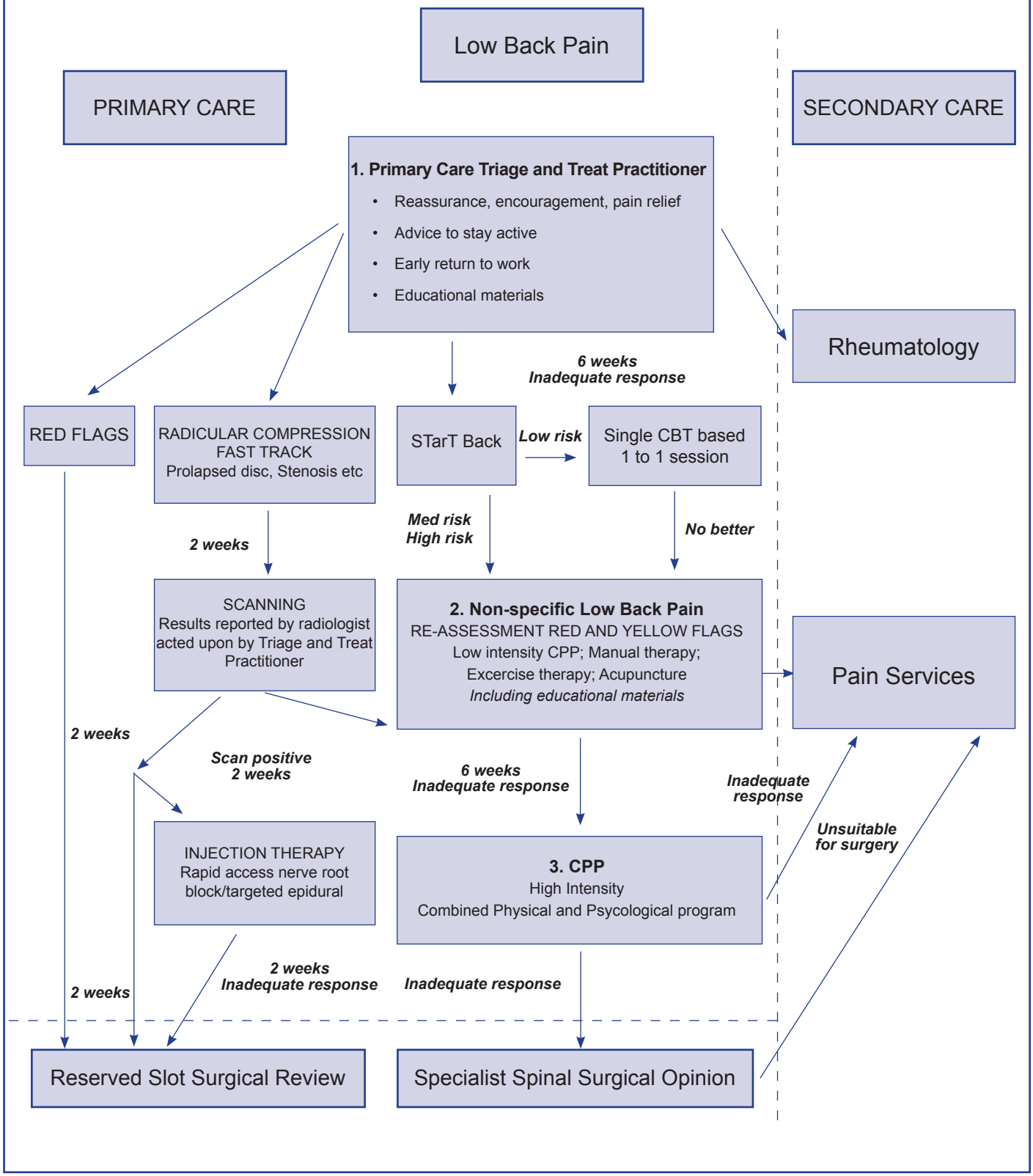
Commissioners

- Commissioners should adopt and commission a back pain pathway in line with the proposed pathway shown in figure 4.1. This is adapted from the NICE guideline and provides a good example of how this may be implemented. Commissioners should ensure that properly constructed Combined Physical and Psychological programmes are commissioned (Fig 4.1 box 3). This is the most serious gap in current service provision and should be addressed urgently. The type of programme recommended by NICE is described in appendix 3 of the DH guidance on Quality and Effective Spinal Services. There are costs attached to introducing these services but the consequent reduction in other costs, particularly injection therapy and inappropriate referrals, would balance out this expenditure. Further detail regarding the cost implications was developed by NICE as a part of the development of CG88.
- Commissioners should ensure, in conjunction with their local providers, that a minimum data set is agreed for inclusion in all Primary Care referrals. This is a low cost recommendation but the savings in terms of improved referrals could be significant.
- Commissioners should adopt the guidance laid out in Appendix 5 in relation to the provision of injection therapy.

NIHR Health Technology Assessment programme

In view of the many patients involved and the significant numbers of injections undertaken in the past, the role of facet injections in non-specific low back pain should be the subject of an appropriately sized and constructed randomised controlled trial on an urgent basis. This should include assessment of pain; functional outcome and an economic evaluation over a two-year follow up period.

Figure 4.1 LOW BACK PAIN



Modified from NICE Updated 11 July 2012

4.2 RADICULAR PAIN (CERVICAL AND LUMBAR)

BACKGROUND

The next largest group are those patients with radicular pain. These fall mainly into two groups:

- Acute radicular compression by a prolapsed intervertebral disc
- Spinal stenosis that may be congenital or acquired and present with spinal/unilateral or bilateral arm/leg pain. The condition may be central, lateral or transforaminal.

COMMENT

If the presentation is of cervical myelopathy, or severe radicular pain with or without neurology, then early investigation by MRI and surgical referral is strongly recommended.

The timing of surgery for radicular pain is important, as clear evidence from randomised controlled trials has demonstrated that prolapsed disc excision is highly effective when carried out at an early stage following the onset of symptoms. It is thus vital that any triage system is able to reliably diagnose acute nerve root compression quickly and early – this may require additional training for some community-based staff and/or the use of one of the assorted diagnostic tools available for community based use. Although some patients' symptoms resolve spontaneously a significant proportion of others suffer considerably and need to have prompt access to surgical assessment, appropriate imaging, advice and treatment.

However in our view there is considerable confusion amongst many commissioners and a proportion of GPs regarding the place of therapeutic interventions including surgery and injections in the treatment of lumbar radicular pain. Existing guidance for patients with non-specific lumbar back pain is NOT directly transferable to patients who present with radicular pain. We are of the view therefore that the issue of lumbar radicular pain requires formally addressing by NICE, in order to clarify these differences. The Taskforce submission to NICE regarding the need for a formal Quality Standard for Radicular Pain can be found in Appendix 3.

Furthermore, it is not unknown for patients for whom surgery or therapeutic injection is indicated to be denied access to appropriate treatment because the differences between the management of non-specific back pain and radicular pain are not widely understood. This is particularly relevant and urgent at present as the widespread application of referral to prior approval schemes or restriction of procedures deemed to be of low clinical value is inappropriately limiting access to effective treatment for some patients with significant radicular pain. There is also a potential for cost saving in that ineffective and /or prolonged treatments can be discouraged and appropriate timely intervention can be defined. As well as surgery, injection therapy as part of a defined patient pathway is an appropriate treatment for radicular pain1 (see Fig 4.1).

Service organisation is crucial to the proper provision of care for these patients. Many parts of the country no longer have local spinal services and patients are being forced to travel long distances even for emergency care often at the risk of further deterioration of their condition. The type and level of service provision and training is important to ensure that appropriate clinical decisions are made and the patient progresses along the established pathway. This would help local populations to improve their service and the outcomes for patients reducing the risk of chronicity.

RECOMMENDATIONS

Commissioners

- Commissioning groups both local and specialist should ensure that appropriate safe levels of service provision, including networks, are in place to enable sound clinical decision making.

NICE

- NICE should ensure that a Quality Standard to include the management of lumbar radicular pain is produced to complement the recently published Guidance concerning the management of low back pain (CG88).

4.3 POTENTIALLY SERIOUS PATHOLOGY (THREATENED SPINAL CORD)

A number of acute conditions that affect the spine have the potential to cause a catastrophic neurological deficit. This may be because of pressure on the spinal cord or compression of the Cauda Equina. If inappropriately managed these neurological deficits may be irreversible, leading to a substantial disability and impairment. It is essential that commissioners have in place policies and strategies for the prompt identification of possible cases and rapid and integrated investigation and if necessary transfer of these patients to an appropriate treatment centre.

Clinically the most important group of spinal patients are those with potentially serious pathology comprising; Cauda Equina Syndrome (CES), cancer of the spine (particularly metastatic disease in numerical terms) and spinal infection. These patients must be recognised and prioritised urgently and may require immediate MR imaging (24/7 facility) and early intervention. A BMJ Paper on CES provides additional information on managing this condition[21] and detailed guidance on the management of spinal metastases has been issued by NICE in Clinical Guideline 75 Metastatic spinal cord compression: Diagnosis and management of patients at risk of or with metastatic spinal cord compression (Nov 2008)[22].

4.3.1 Cauda Equina Syndrome

The Cauda Equina is the bundle of nerves projecting from the lower end of the spinal cord which terminates in the upper lumbar spine. As it passes through the low lumbar spine, the cauda equina is vulnerable to compression from large disc herniations, especially in the presence of a narrow spinal canal (both in congenital or acquired spinal stenosis). If the Cauda Equina is damaged it has catastrophic effects on urinary and faecal continence and normal sexual function. This is the Cauda Equina Syndrome. The warning signs of progressive neurological deficit are frequently missed and awareness needs to be raised among staff in primary care and in Emergency Departments. The key investigation should be an emergency MRI scan, so access to a 24/7 service is essential when dealing with this condition. This is a surgical emergency and treatment should be undertaken urgently. In England 2010/11, 981 surgical decompressions were performed for CES (60% neurosurgery; 40% orthopaedic).

In the time period 2002-2010 235 claims were closed by the NHSLA. Successful claims in the context of acute care were associated with a Cauda Equina Syndrome secondary to prolapsed intervertebral disc disease (38 cases) with mean average damages of £268,515[23].

[21] 'Cauda Equina syndrome' Lavy C, James A, Wilson-MacDonald J, Fairbank J. BMJ 2009; 338:936: www.bmj.com/cgi/content/extract/338/mar31_1/b936
[22] http://guidance.nice.org.uk/CG75
[23] Quraishi,T.C. et al, Malpractice litigation and the Spine: NHS perspectiveon235 successful claims in England.Spine21 (Suppl.2) ,S196-S199,2012.

RECOMMENDATIONS

Commissioners

- Rehabilitation is extremely important in patients with bowel or bladder disability secondary to Cauda Equina Syndrome. Frequently this rehabilitation is overlooked and significant distress, with potential restriction of employment and social integration, is unnecessarily placed on these patients. Commissioners should ensure that there is an appropriate link from the treating centres to this specialist advice.

NHSLA

- The Taskforce recommends that the NHSLA produces an annual data set outlining the causes and costs of litigation.

4.3.2 Spinal (Extradural) Metastases

BACKGROUND

The two important groups of symptoms are pain from instability and neurological compromise. The painful paralysis, with or without instability and double incontinence, associated with spinal cord compression from metastases, (MSCC), spinal myeloma or lymphoma, is a common complication in patients with these cancers.

This is estimated to affect approximately 3,000 patients p.a. in England. Studies have consistently demonstrated that MSCC is diagnosed late and that the ability to walk after treatment is directly associated with the ability to walk at time of diagnosis. Recovery of mobility is unlikely if paraplegia has become established at the time of diagnosis and this may require 24 hour nursing care and prolonged hospitalization for the remainder of the patient's illness (2-5). If home care is possible this often places great demands on the family and assisting external agencies at considerable cost.

Improved oncological outcomes have resulted in more frequent presentation of metastatic spinal cord compression (MSCC)[24]. Autopsy data demonstrates spinal metastases in 70% of the commonest cancers and the incidence of symptomatic MSCC is up to 10%. Recent technological advances and improved evidence in the form of a meta-analysis and randomised controlled trials have strengthened surgery's role. Spinal decompression and stabilisation have been shown to restore or maintain ambulation, provide pain relief, improve quality of life and survival and is cost-effective.

In view of this, in 2005 NICE commissioned a clinical and service guideline[25]. Drawing on this, and subsequently to improve the care of all acute medical events in cancer patients NCAT have published Acute Oncology Measures[26] (March 2011). Eight out of the thirteen measures relate to MSCC and this process will be the focus of peer review (which includes three mandatory audits as part of National Cancer Peer Review 2011-13). At present networks are putting these into practice. Spinal Surgeons have been given central roles in education of the workforce and delivery of care for this group of patients.

COMMENTS

With a greater proportion of the population living with cancer, surgical demand for their care is increasing. Similarly many primary site cancers, which historically were assessed as not being appropriate for spinal surgery when developing MSCC, now benefit from improved oncological control of their underlying disease.

[24] The surgical management of metastatic spinal cord compression" www.jbjs.org.uk/media/33589/focuson_spinalcord.pdf
[25] NICE guideline CG75 MSCC (November 2008) – see website (Quick Reference Guide) http://guidance.nice.org.uk/CG75/QuickRefGuide/pdf/English
[26] Acute Oncology measures (March 2011) http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_125889.pdf

Patients given radiotherapy, who are often suffering from instability pain that is not subsequently treated, continue in pain even though they could benefit from surgery.

Management of painful symptoms from incipient structural failure of the vertebral body due to spinal metastases and arrest of potential progression to neurological compromise has been greatly improved using percutaneous cement reinforcement of the vertebral body (vertebroplasty and in select cases kyphoplasty) This has reduced surgical requirement and associated bed days considerably.

The usual surgical treatment for the majority of these patients is palliative (rather than attempted curative excision), decompression and stabilisation. These procedures are often within the competence of a number of specialist spinal surgical units within a network, using instrumentation with which they are familiar. MRI and CT scanning must be available 24/7 in the major spinal surgical centres. In other hospitals where patients with metastatic spinal cord compression may be received, MRI scanning should be available seven days a week. At present, despite guidance, the management of many of these tumours may (at times unavoidably) not have been as satisfactory as possible as a result of delays in presentation and/or diagnosis.

RECOMMENDATIONS

The NHSLA (and any and all related organisations) should publish comprehensive audit data on this area if improvements are to be appropriately targeted and managed.

Commissioners

- Commissioners should review provision of services to manage MSCC, in line with the measures detailed in the NICE Guidance and Acute Oncology Measures. In particular this should include:
    - Geographical coordination of availability of appropriate imaging (MRI and CT), and on-call Spinal Surgeons and Oncologists. The change related to improved management and collaboration and not investment in infrastructure.
    - Provision of an emergency spinal coordinator (role including MSCC) in spinal surgery centres. There is a cost attached to this recommendation, but this relates to a small number of posts at all central hub providers.
    - Encourage National Cancer Peer Review audits to enhance service evolution for this emergent patient population.
- Interventional radiology (for biopsy, percutaneous cement reinforcement and embolisation) should be available in all cancer networks, normally alongside spinal surgical services (to ensure appropriate management of adverse events such as cement cord compression).
- Commissioners should have in place services for the rehabilitation of patients with neurological compromise. These should be multidisciplinary.
- Larger centres should appoint a spinal emergency coordinator to support the regional Network.

4.3.3 Spinal infection

BACKGROUND

A recent analysis of NHSLA data has indicated that missed spinal infection has resulted in the highest average damages paid to patients[27].

These are increasingly common, highly complex cases and diagnosis is often difficult and therefore delayed. Around 5000 FCE's were completed in 2011, the majority, 75%, being emergency admissions. A significant number of patients are admitted under the care of consultants in general medicine and those working with infectious diseases. Analysis of FCEs confirms that in a significant proportion no biopsy procedure was undertaken. Inadequately treated spinal infection may:

- Cause avoidable spinal deformity and/or paralysis (and rarely death) in those with an otherwise normal life expectancy.
- Need multiple episodes of care including surgical interventions particularly if antibiotics are started without appropriate microbiological diagnosis and spinal surgical consultation.

There are two main microbiological causes in the UK and many less frequent causes:

- *Pyogenic* bacterial infection is usually spontaneous but may follow medical intervention at sites other than the spine. The incidence of this type of infection in healthy people remains very low. The incidence has however increased overall as it often occurs in those with compromised immunity. i.e. diabetics, those with Tuberculosis, those on steroids, immuno-suppression for any cause, chemotherapy, dialysis, intravenous drug users and those with sickle cell disease.
- Less commonly pyogenic infection may occur after surgery on the spine itself. This is usually recognised and treated successfully after correct bacteriological diagnosis and appropriate antibiotics are given.
- *Tuberculous* spinal infection is more common, though not exclusively, in some immigrant communities and in those living in close proximity to those infected with active pulmonary tuberculous disease. Increasingly multiply resistant strains are being seen causing problems with treatment. It is a great mimic and may easily be confused with other conditions. Biopsy for bacteriological microscopy and culture, histology and definition of antibiotic sensitivity is important.

COMMENT

If spinal infection is recognised at an early stage (MRI is usually diagnostic) and appropriate image guided biopsy identifies the microbiological cause and sensitivities, treatment without surgery is usually possible and successful. When diagnosis is delayed and inappropriate antibiotics are given surgery may become necessary and whether successful or not, may result in multiple treatment episodes and prolonged courses of expensive antibiotics. The Taskforce recommends that NICE be asked to produce a Quality Standard on the management and treatment of spinal infection.

RECOMMENDATIONS

Commissioners

- Specialised commissioners should ensure that networks are in place for the management and provision of treatment for spinal infection. The litigation costs arising from poorly managed spinal infection are significant and outweigh the cost of improving this service.

[27] Quraishi,T.C.et al, Malpractice litigation and the Spine: NHS perspective on 235 successful claims in England. Spine21 (Suppl.2) ,S196-S199,2012.

- Local and specialised commissioners should ensure they commission services from centres where multi-disciplinary discussion, including spinal surgeons, occurs before any treatment of suspected spinal infection is commenced. These services are available in many areas and the process of implementing the move to specialised commissioning through NHS Commissioning Board is likely to drive forward change in areas that are poorly served.
- Specialised commissioners should ensure there is a nominated regional centre that keeps a register of spinal infection. The results of treatment should be audited annually and adverse outcomes analysed and presented to the parties involved.
- Commissioners should ensure that providers establish and follow a defined sound and clinical pathway when spinal infection is suspected. This should include:
- MRI scans of the spine, unless contraindicated.
- A low threshold for biopsy in suspected spinal infection unless specifically contraindicated.
- Antibiotics should not be started until every possible source of a causative organism has been cultured. If a patient is septicaemic it may be appropriate to start antibiotics without a spinal biopsy but this should only be done in liaison with the spinal unit who would ultimately be responsible for any further intervention.

4.3.4. Primary extra-dural spinal tumours of osseo-ligamentous and neurological origin

BACKGROUND

Both of these groups of tumours are very rare, with approximately 100 of osseo-ligamentous origin and 100 of neurological origin per annum. Each group requires different preoperative assessment, biopsy, histological assessment, MDT decision-making, surgical training and techniques but particularly adjuvant chemotherapy and radiotherapy techniques. This is reflected in the different NICE guidance pertaining to both these generic pathologies. See NICE guidance[28].

COMMENTS RELEVANT TO BOTH GROUPS

At present, despite guidance, the management of many of these tumours may, at times, not have been satisfactory as a result of delays in diagnosis. In many instances with rapid onset of deteriorating neurology, decompression is mandated in the hope of preservation of function. This approach can result in local dissemination of tumour through intralesional resection. Occasionally, if the patient's condition allows, definitive extralesional, possibly curative, resection may be possible.

COMMENTS SPECIFIC TO PRIMARY TUMOURS OF OSSEO-LIGAMENTOUS ORIGIN

Between 20-40% of primary bone tumours are benign insofar as they do not usually metastasise but can be variable in behaviour. At the aggressive end of the spectrum they may require multiple procedures if assessed or managed inappropriately and/or be fatal due to either peroperative haemorrhage or serial recurrence. Anticipating their behaviour and planning appropriate treatment requires specialist combined radiological and histological advice to the treating team. Interventional radiology for embolisation may diminish morbidity and radio-frequency ablation may avoid open surgery in some instances. Surgical management may be as challenging as for malignant tumours. See appendix 7 for further detail about tumours of osseo-ligamentous origin.

[28] http://www.nice.org.uk/nicemedia/live/10903/28934/28934.pdf

COMMENTS SPECIFIC TO MALIGNANT TUMOURS OF OSSEO-LIGAMENTOUS ORIGIN

These account for 10% of all primary bone tumours and are forty times less common than spinal metastases. Because of their propensity to seed easily biopsy tracks should be planned to be excisable. All aspects of their management require MDT input and surgery is usually technically challenging if en-bloc resection is to be achieved. Neo-adjuvant chemotherapy may be required to shrink the tumour preoperatively to optimise the possibility of resection. The place of IMRT (Intensity Modulated Radiotherapy) and Proton therapy continues to be defined and requires permissive surgical techniques with non-standard constructs.

Further detail can be found in Appendix 7.

RECOMMENDATIONS

- Treatment for these tumours (both benign and malignant) should be commissioned in specialist centres.
- The NHS Commissioning Board should commission this service in line with extant NICE guidance for primary bone tumours.
- Provision of this service should be subject to interval peer review and national comparative audit of outcome by the specialist spinal societies using the data recorded in the British Spine Registry.

4.3.5. Primary intra-dural spinal tumours

BACKGROUND

Intra-dural tumours comprise a very small proportion of the total oncological workload but have a great capacity for causing serious neurological deficit due to their proximity to the spinal cord. They often present late when there is already established deficit. It is well recognised in the adult literature that outcome in terms of neurological deficit is directly related to the extent of pre-existing neurological deficit, and outcomes from surgical treatment are better if the patient has less neurological disability at the time of surgery. The problem is one of recognition, especially as a GP may never see a case in their entire working life.

Surgery is a high user of resource, both in the actual treatment and the subsequent requirement for rehabilitation. The majority of these tumours are benign, or at the low grade end of the spectrum, so that life expectancy is only rarely affected by the tumour alone. The complications of the condition and its treatment will affect life expectancy.

Tumour Surgery

A large proportion of these lesions follow a benign course and surgical excision is the primary treatment modality. This surgery can only be performed in neuroscience centres both for adults and children. It is highly specialised and is in the intra-dural pathology group of the specialist definition set.

For further details on coding and terminology go to Appendix 7.

4.4 SPINAL DEFORMITY (SPECIALISED CARE)

4.4.1 Paediatric

BACKGROUND

In children, spinal deformity surgery is performed in a small number of centres in England. HES data from 2011/12 shows that posterior instrumented scoliosis correction is performed in 19 centres (except for 30 cases). Some centres perform surgery on patients with all causes of scoliosis from infants to adulthood whilst others will operate only on fit and healthy teenagers with scoliosis (adolescent idiopathic scoliosis, the commonest cause). This distinction depends on numerous factors including geography, surgical experience and availability of backup services.

Wheelchair-dependent children with severe neurological disease (mainly but not completely due to cerebral palsy) are particularly prone to progressive spinal deformity. Improvements in medical management have led to extended survival and increasing demand for surgical treatment. It is this change above others that has required greater provision of HDU/ITU support.

The surgery is most commonly performed from the back of the spine (posterior) with some patients requiring surgery from the front of the spine (anterior) and others requiring a combined procedure (anterior and posterior).

COMMENT

Types of Paediatric Spinal Deformity Surgery

It is proposed that paediatric spinal deformity surgery be considered as two types:

- 'Type I' paediatric spinal deformity surgery in ambulant, otherwise healthy children in mainstream education aged 10 to 18 years.
- 'Type II' paediatric spinal deformity surgery is more challenging, and includes younger children and those with associated medical problems.

Some Spinal Centres perform all aspects of paediatric spinal deformity surgery (Type I and II) whilst others only operate on 'Type I' cases that are mainly adolescent idiopathic scoliosis. The Centres dealing with Types I and II provide much needed specialised outpatient management for the more complex cases.

A Guide to Good Practice: "The Management of Spinal Deformity in the United Kingdom," was produced by the British Scoliosis Society in 2003.

The Taskforce published ten Top Tips for the effective organisation of scoliosis services in 2010. Gateway Ref.13885.

Centres currently undertaking instrumented paediatric deformity surgery on Type I cases should continue this provided they meet the requirements of the service specification (see Appendix 8). Spinal Centres currently not doing paediatric spinal deformity should not be commissioned without proving a significant need.

Centres providing more complex paediatric deformity surgery should be designated and must have the appropriate facilities (see Appendix 8). Isolating paediatric deformity surgery should be avoided as it may

reduce exposure and familiarity to more complex spinal procedures done infrequently in children and recruitment may be difficult.

COMMISSIONING

The current OPCS codes for spinal deformity surgery are:

- V411 posterior attachment of correctional instrument to spine
- V412 anterior attachment of correctional instrument to spine
- V414 anterior and posterior attachment of correctional instrument to spine

These OPCS codes are all grouped in the Healthcare Resource Group (HRG) HR01 (B or C) which is currently excluded from national tariff. The cost of this surgery is high due to:

- Initial setup costs and maintenance (see Appendix 8)
- High cost consumables
  - Spinal instrumentation including discarded implants (wrongly sized or damaged during correction) – very expensive
  - Bone graft substitutes
  - Other surgical high cost consumables e.g. Haemostatic agents
  - Blood products and cell salvage
- Long surgical procedures
- Staff (surgeons, anaesthetists, theatre nurses, radiographers, specialist spinal nurse/physiotherapists, spinal cord monitoring team)
- Length of stay

Surgery in Type I patients is generally less expensive than in Type II patients as they require less instrumentation, a shorter surgical procedure, fewer high cost consumables, have fewer complications and a shorter length of stay. In each centre, the ratio of Type I to Type II patients varies, therefore when commissioning, it would not be appropriate to have one tariff for every scoliosis operation.

There is also a need for Commissioners and providers to demonstrate sensitivity and flexibility in the management of older children (and their transition to adult services) by ensuring that not just chronological age is used to decide when care is transferred. Psychological and physiological age are the significant factors and should be given primacy in the decision making process.

Annual audit of complications and Patient Reported Outcome Measures (PROMS) should be mandatory. PROMS should include the Scoliosis Research Society-22 Questionnaire.

RECOMMENDATIONS

Commissioners

- The following terminology should be used for commissioning paediatric spinal deformity surgery:
  - 'Type I' paediatric spinal deformity surgery is defined as instrumented spinal deformity correction in ambulant, otherwise healthy children aged 10 to 18 years.
  - 'Type II' paediatric spinal deformity surgery includes younger children and those with associated medical problems.
- Specialised commissioners should ensure that centres performing paediatric spinal deformity surgery should be designated as either performing 'Type I' or 'All' (Type I and II) paediatric spinal deformity surgery and need to meet the criteria for staffing and the provision of appropriate facilities.
- Specialised commissioners should ensure that the appropriate number of paediatric intensive care beds and spinal cord monitoring is available, as these are recognised as the main causes of cancellation or last minute cancellation of cases causing distress to patients and their families and the waste of expensive resources.
- Specialised commissioners should encourage an MDT approach to decision making for adult spinal deformity surgery. Complications and patient reported outcome measures (PROMS) should be reported annually from all Spinal Centres performing adult and paediatric spinal deformity surgery.

Information Centre and Payment by Results

- The payment structure for these procedures should be reviewed, as this service is currently not subject to Payment by Results. It is suggested that there should be three surgical groups identified for different payments for instrumented paediatric spinal deformity surgery:
  - Lowest payment: Surgery in Type I deformity – usually adolescent idiopathic scoliosis.
  - Intermediate payment: Posterior surgery in Type II deformity.
  - Highest payment: Combined anterior and posterior surgery in Type II deformity.

4.4.2 Adult

BACKGROUND

Adult spinal deformity is secondary to degenerative change in the lumbar spine or late progression of adolescent idiopathic scoliosis. Surgery ranges from relatively small procedures such as nerve root decompressions to anterior and posterior instrumented scoliosis corrections. With an aging population and increasing demands for activity in older age, degenerative scoliosis is becoming an increasing burden. HES data from 2010/11 shows 725 cases of spinal deformity surgery performed on patients aged 18+ years. There were 367 posterior instrumented deformity corrections performed in 37 hospitals. This is likely to be an under estimate as many of these procedures in adults may not be coded as deformity corrections. As many surgeons are familiar with the techniques for implant insertion in the lumbar spine, this surgery is performed in more centres than for paediatric deformity surgery. The precise indications and techniques for this surgery are still

evolving but whilst there are demonstrated improvements in QALY's, the complication rates from this surgery remain high.

COMMENT

Commissioning of Adult Spinal Deformity Surgery

This area of spinal surgery is very difficult to commission because the surgery ranges from relatively simple surgical procedures with only a few implants to a very large procedure with many implants and complex surgical techniques. It is suggested that posterior instrumented spinal deformity surgery in adults be defined as procedures where the OPCS code is V411, V412 or V414 (see above) plus the code for more than 2-levels of the spine (V553) and an ICD-10 code for a spinal deformity diagnosis. This should also be divided into:

- Type I: Posterior instrumented scoliosis correction +/- decompression(s).
- Type II: Posterior and/or anterior instrumented scoliosis correction +/- decompressions OR Posterior instrumented scoliosis correction + vertebral body osteotomies +/- decompression(s).

It may be better to limit commissioning of this service to a smaller number of centres or from regional networks as for paediatric spinal deformity (not necessarily the same centres). In this complex, expensive surgery with high risk of complications (see Appendix 8), this will allow commissioners to ensure:

- An approved multi-disciplinary approach with all surgical procedures being considered by more than one surgeon.
- Appropriate expertise being generated in pre-operative preparation, operative techniques and post-operative management.
- Continual monitoring of outcome measures to improve surgical indications and techniques (who to operate on, when and how to do it). Regional networks will facilitate this approach.
- In adult spinal deformity, complications and PROMS should be reported annually. PROMS should include a disease specific outcome measure e.g. the Oswestry Disability Index (ODI) and Visual analogue pain scores and a global outcome measure e.g. EQ-5D or SF-36.

RECOMMENDATIONS

Commissioners

- Commissioners should encourage an MDT approach to decision making for adult spinal deformity surgery.
- Complications and patient reported outcome measures (PROMS) should be reported annually from all Spinal Centres performing adult spinal deformity surgery.

Connecting for Health, Information Centre and Payment by Results

- The Department of Health, and thereafter MONITOR and the NHS Commissioning Board should review the payment structure for these procedures, as this service is currently not subject to Payment by Results. It is suggested that there should be three surgical groups identified for different payments for instrumented paediatric spinal deformity surgery:
  - Lowest payment: Surgery in Type I deformity – usually adolescent idiopathic scoliosis.
  - Intermediate payment: Posterior surgery in Type II deformity.

- Highest payment: Combined anterior and posterior surgery in Type II deformity.

- The Department of Health should commission a review of the coding structure for these procedures, as adult spinal deformity surgery is increasing in demand due to an aging population and surgery is technically demanding with the potential for high complication rates. A coding definition of the more complex surgery in patients with adult deformity is proposed:

  - OPCS code indicating instrumented spinal deformity correction.

  - More than 2 levels of the spine.

  - An ICD-10 code for a spinal deformity diagnosis.

  With an additional code for 'anterior vertebral osteotomy' that is not in the current OPCS codes, this would allow adult spinal deformity surgery to be divided into:

- Type I: Posterior instrumented scoliosis correction +/- decompression(s).

- Type II: Posterior and/or anterior instrumented scoliosis correction +/- decompressions OR Posterior instrumented scoliosis correction + vertebral body osteotomies +/- decompression(s).

4.5 SPINAL TRAUMA (SPECIALISED CARE)

BACKGROUND[29]

Injury to the spine can affect both the structural spinal column and the delicate neurological elements that it surrounds. The potential severity of these injuries and the potential for life changing consequences make it essential that personnel managing these patients are appropriately skilled in order to minimise the impact of the injury and its complications.

An injury to the structural spinal column may affect the bones, discs and ligaments, and may be stable or unstable. Damage to this column may or may not be accompanied by injury to the delicate neurological structures including the spinal cord and emerging nerve roots. This may result in partial neurological deficit or complete paralysis.

The management of these patients has to be focused on identifying whether or not the injury is stable or unstable and the prevention of secondary neurological damage in those patients who are initially intact or exacerbating neurological damage that has already occurred. This requires a detailed clinical, neurological, and radiological assessment of the spinal column injury.

All those who deal with spinal injury (i.e. all ambulance personnel, emergency departments, acute admission units) must be trained in spinal and neurological assessment and have specific training in the handling and nursing of the unstable spine. They must understand the implications of the threatened spinal cord and the immediate bladder and skin care of the paralysed patient. The prevention of complications begins at the moment of arrival of the emergency services and thereafter in the emergency department. There must be twenty-four hour CT and MRI scanning facilities.

The creation of Regional Trauma Networks will provide the NHS with a framework, against which services can secure improvements in survival and better outcomes for patients suffering life threatening and major complex injuries. At the centre will be a Regional Major Trauma Centre (MTC) that will receive significant major trauma

[29] Background references include: http://www.excellence.eastmidlands.nhs.uk/welcome/improving-care/emergency-urgent-care/major - trauma/nhs-clinical- advisory-group/. -Major Trauma Report Final -Management of People with Spinal Cord Injury and The Initial Care and Transfer of Patients with Spinal Cord Injury published by the British Orthopaedic Association 2006

directly or after triage from surrounding trauma units. Patients at the roadside with obvious spinal cord injury/ paralysis or with multiple injuries, (i.e. patients with head injuries, which may obscure injury to the spinal column and spinal cord) will be taken directly to the MTC. The MTC will have a twenty-four hour spinal surgery rota.

Each MTC (and all trauma units related to it within a network) must have a defined relationship with a Spinal Cord Injury Centre (SCIC). As the network is established pathways and protocols should be agreed with the SCIC. Otherwise the SCIC must be contacted within four hours of the arrival of a spinal cord injured patient for advice concerning immediate management, possible outreach consultation to plan onward care, and rehabilitation. There will also be a need for continuing spinal surgery support of the SCIC.

Alongside Regional Trauma Networks, Regional Spinal Networks are evolving and should be established. These will be organised to take account of existing regional facilities, skill sets and geography. The spinal network, in addition to organising general provision of spinal services will, in the emergency setting, not only deal with spinal trauma but other causes of the threatened spinal cord with or without neurological deficit e.g. metastatic spinal cord compression and Cauda Equina Syndrome. Trauma centres and units should ensure that spinal cord injury without neurological deficit is included in the rehabilitation pathways being established under the major trauma networks.

Rehabilitation of spinal trauma is critical to enable satisfactory reintegration into society. Spinal cord injured patients are well-treated in Spinal Cord Injury Centres and co-ordination with the link centre at the earliest possible opportunity is important. Patients with spinal column injuries but no neurological deficit also require an explicit rehabilitation pathway where the end point of rehabilitation is social integration such as return to work or occupation and return to social and recreational activities.

Most bony spinal column injury is not associated with multiple injuries, and is of little or no threat to neurological structures. Most of these cases will be taken to and dealt with in Network Trauma Units. Nevertheless, as noted above, these Units must have a twenty-four hour capability to assess and triage spinal injuries. Their ability to take on in-house management of these cases will be dependent on facilities and the skill set of local orthopaedic and spinal surgical staff. The bulk of spinal trauma will be dealt with in units such as this and many are capable of dealing with complex column injury without spinal cord injury.

The management of spinal fragility fractures is dealt with in Section 4.6

RECOMMENDATIONS

Commissioners

- Specialised commissioners should ensure that patients with spinal injuries, in particular those with spinal cord injuries are being managed according to established Regional Trauma Network pathways.
- Specialised and local commissioners should ensure that all elements of the Trauma Network have appropriate training in the assessment and management of the unstable spine, threatened spinal cord, and paralysis.
- Specialised and local commissioners should ensure with that in line with agreed Trauma Networks, every hospital receiving trauma cases has a defined relationship with the appropriate spinal cord injury centre to provide advice, outreach care and education in the needs and immediate management of these vulnerable patients.
- Commissioners should ensure that Trauma Centres and Units have established rehabilitation pathways for patients as a part of the major trauma networks.

4.6 OTHER SPINAL PATHOLOGIES (SPECIALISED CARE)

4.6.1 Inflammatory Back Pain

BACKGROUND

Ankylosing Spondylitis[30,31], Radiographic and Non-Radiographic Spondyloarthropathy[32] are mainly dealt with by rheumatologists. Individuals in whom this diagnosis is suspected should be assessed by a rheumatology service, which may include Specialist Physiotherapists and Nurses. Magnetic resonance imaging can detect early spondyloarthropathy whereas plain radiographic changes occur late. Modern therapy, utilizing TNF therapy can induce complete symptomatic remission.

COMMENTS

The rheumatologist should be part of a multidisciplinary team with expertise in clinical assessment, appropriate imaging, metrology, physiotherapy, occupational therapy and effective drug therapies[33,34]. This team should have easy access to musculoskeletal radiologists, ophthalmologists, gastroenterologists, dermatologists and specialist surgeons (orthopaedic and spinal) in order to manage related problems (uveitis, inflammatory bowel disease, psoriasis, spinal deformity). This approach is essential for the delivery of good quality care and the achievement of the best possible outcome.

RECOMMENDATIONS

Commissioners

- Local commissioners should ensure that all patients with inflammatory back pain are referred to a Rheumatologist.

4.6.2 Spinal Fragility Fractures

BACKGROUND

Insufficiency fractures of the vertebra are a major cause of morbidity and are estimated to affect one in four of adults over the age of 50[35]. Only 50 % of osteoporotic vertebral fractures are symptomatic. Only 33% are clinically diagnosed. Up to 20% of patients with an incident vertebral fracture experience a further vertebral fracture within one year. In patients with risk factors for Osteoporosis presenting with height loss, back pain or new onset kyphosis or scoliosis, a plain radiograph of the dorsal and lumbar spine should be performed to confirm the diagnosis of vertebral fracture and exclude other pathology.

Preventive[36] and non-operative management is delivered in Primary Care.

Local networks may include metabolic physicians, rheumatologists, pain teams and spinal surgeons.

Bone density measurements using dual-energy X-ray absorptiometry (DXA) should be requested in all patients presenting with a low trauma vertebral fracture below the age of 75. In patients older than 75 a DXA

[30] LOOKING AHEAD: Best practice for the care of people with ankylosing spondylitis (AS) National Ankylosing Spondylitis Society (NASS). http://www.nass.co.uk/campaigning/looking-ahead

[31] BSR guidelines for prescribing TNF- blockers in adults with ankylosing spondylitis. Report of a working party of the British Society for Rheumatology. Rheumatology (July 2005) 44 (7): 939-947.

[32] Bennett A N,Marzo-Ortega H et al. The evidence for whole-spine MRI in the assessment of axial spondyloarthropathy. Rheumatology (2010) 49 (3): 426-432.

[33] NICE TA233: Golimumab for the treatment of ankylosing Spondylitis

[34] NICE TA143: Adalimumab, etanercept and infliximab for ankylosing Spondylitis

[35] Wilson D. Vertebroplasty for vertebral fracture. On the basis of current evidence cannot be recommended as the first line treatment. BMJ 2011;343:d3470.

[36] NICE. Osteoporosis - secondary prevention including strontium ranelate (TA161). http://publications.nice.org.uk/alendronate-etidronate-risedronate-raloxifene-strontium-ranelate-and-teriparatide-for-the-ta161

is not essential in diagnosing osteoporosis but may be useful if there is primary treatment failure.

Up to 30% of women and 55% of men with symptomatic vertebral crush fractures have underlying secondary osteoporosis, where treatment may lead to large increases in bone density. These conditions should therefore be sought by medical history, physical examination and appropriate investigations.

Although there is little RCT level evidence on the management of with acute vertebral fractures, measures should involve suitable analgesia, an assessment for underlying secondary causes of Osteoporosis and implementation of appropriate medications to reduce further fracture risk. In addition to reducing further fracture risk, several Osteoporotic medications have been associated with a reduction in back pain associated with osteoporotic vertebral fracture. These medications include; Calcitonin (administered either subcutaneously or topically nasally),[37] Teriparatide (A recombinant fragment of parathyroid hormone)[38] and Bisphosphonates[39,40]. In patients with ongoing back pain, not responding to the above measures consideration should be given for spinal surgical referral. MRI scans should be requested to look for bone oedema confirming the presence of an acute vertebral fracture and excluding other pathology. There are a range of interventions which may help this difficult and distressing condition. For example injection of local anaesthetic into the facet joints can provide relief [41]. Non-responders can be treated with vertebral body augmentation (vertebroplasty/kyphoplasty) by specialist radiologists or surgeons trained in the technique. Studies have been published which have clarified the best strategy, though more are in process. Commissioners should be alert to changes in practice in this area. [42,43] Two RCTs did not show any evidence for vertebroplasty although several observational studies have shown benefit in individual patients. There is a paucity of RCT data on Kyphoplasty but there does appear to be some benefit in selective patients.[44,45,46]

RECOMMENDATIONS

- In light of demographic changes, local commissioners should ensure that services include metabolic and bone density assessment. This equipment is widely available in many hospitals and dedicated clinics can provide access to assessment where equipment and expertise are not available in the community.
- Specialist provision of services for insufficiency osteoporotic spine fractures should be established. This includes medication and interventional procedures, which are already available in many places across the country.

[37] Pain relief from nasal salmon calcitonin in osteoporotic vertebral crush fractures. A double blind, placebo-controlled clinical study. Acta Orthop Scand Suppl 1997;275:112-114.
[38] Langdahl BL, Marin F, Jakob F, Karras D, Barrett A, Ljunggren O, Walsh JB, Rajzbaum G, Barker C, Lems WF Fracture rate and back pain during and after discontinuation of Teriparatide: 36-month data from the European Forsteo Observational Study (EFOS) Fahrleitner-Pammer A, Osteoporos Int. 2011 Oct;22(10):2709-19
[39] A. J. J. Abdulla. Use of pamidronate for acute pain relief following osteoporotic vertebral fractures. Rheumatology (2000) 39 (5): 567-568.
[40] Gangji V, Appelboom T.Analgesic effect of intravenous pamidronate on chronic back pain due to osteoporotic vertebral fractures. Clin Rheumatol. 1999;18(3):266-7.
[41] Wilson D, et al. Facet joint injections as a means of reducing the need for vertebroplasty in insufficiency fractures of the spine. Eur Radiol 2011.
[42] Wilson D. Vertebroplasty for vertebral fracture. On the basis of current evidence cannot be recommended as the first line treatment. BMJ 2011;343:d3470.
[43] Wilson D, et al. Facet joint injections as a means of reducing the need for vertebroplasty in insufficiency fractures of the spine. Eur Radiol 2011.
[44] Kallmes DF, Comstock BA, Heagerty PJ et al. A randomized trial of vertebroplasty for osteoporotic spinal fractures. N Engl J Med 2009;361(6):569-579.
[45] Buchbinder R, Osborne RH, Ebeling PR et al. A randomized trial of vertebroplasty for painful osteoporotic vertebral fractures. N Engl J Med 2009;361(6):557-568
[46] Kasperk C, Hillmeier J, Noldge G et al. Treatment of painful vertebral fractures by kyphoplasty in patients with primary osteoporosis: a prospective nonrandomized controlled study. J Bone Miner Res 2005;20(4):604-612.

4.6.3 Coccydinia

BACKGROUND

The prevalence of coccydinia is unknown but is reported to affect women more than men (5:1). The primary diagnosis code M533, suggests that potentially 1,211 sacro-coccygeal injections were carried out for coccygeal pain in 2010 - 2011. Coccydinia can be classified as idiopathic or traumatic (falls, childbirth, etc). In rare cases neoplasm or infection can be the cause.

A stepped care approach is recommended, but the evidence for Coccydinia interventions is generally weak. In the initial stages, non-steroidal anti-inflammatories, coccygeal cushions and a stool softener should be advised. Following this referral for manual therapy has been shown to be of benefit to some. If symptoms persist then investigation by MRI is important to exclude serious pathologies. Where symptoms are refractory to conservative management, referral for fluoroscopic guided injection is appropriate. Should insufficient relief be achieved, referral for a manipulation under anaesthetic (MUA) +/- injection should be considered. Surgery (coccygectomy) should be considered if these interventions fail. This strategy is supported by several observational reports[47].

RECOMMENDATIONS

Commissioners

- Coccygectomy should be reserved for the small group of patients who have intrusive symptoms despite optimal conservative management and limited or no response to injection and MUA.

[47] Fairbank J. Sacrum and coccyx. Oxford Textbook of Orthopaedics and Trauma. 2002:550-2.

5. OTHER NATIONAL ISSUES

5.1 OVERVIEW

The Health and Social Care Act sets out a compelling vision for an NHS configured to deliver increasing quality of services. It also represents a significant delivery challenge and will not happen successfully without clarity and a focus on the objectives of the reform – of a patient-led service, local empowerment, clinical leadership and a sustained focus on improving outcomes.

A part of this reform programme, whilst the commissioning of most services will be transferred to new Clinical Commissioning Groups, the Act also includes provision for the Secretary of State to prescribe certain services to be directly commissioned by the NHS Commissioning Board. The four factors that would be considered in determining these services are:

- The number of individuals who require the provision of the service or facility
- The cost of providing the service or facility
- The number of persons able to provide the service or facility
- The financial implications for commissioning consortia if they were required to arrange for the provision of the service or facility

In determining which services will be prescribed in this way, DH Ministers have made clear that in the first instance, the Specialised Services National Definition Set (SSNDS) forms the solid basis of the list.

5.2 RESEARCH AND DEVELOPMENT

Research is at the centre of NHS activity. The capacity of the NHS to deliver high quality studies in collaboration with NIHR has been considerably enhanced since the advent of CLRN's. This report has identified a number of areas of spinal clinical activity where the evidence base for interventions is poor or incomplete. This should inform Industry, research leads and grant givers. Spinal surgery uses a wide range of Med Tech implants and devices. Development of industry-funded studies is a priority. The research design for most of these studies is likely to be a cohort study, but in some cases RCT's are feasible. Existing examples are the Magec study of an implant for treating early onset scoliosis that can be lengthened in the clinic, avoiding many distressing general anaesthetics. The development of commercially funded device research is a priority for NIHR. In recent years an increasing and appropriate focus has developed on the evidence base underpinning medical interventions. This has been classified in terms of its strengths and weaknesses with double blind RCTs being regarded as the gold standard for most interventions. NICE has recognised that in some surgical areas this is neither always feasible nor the most appropriate method.

It is also relevant that from concept through ethical approval and procedure performance to gain sufficient numbers to adequately power a trial, a minimum of two year follow-up, data collation, processing, write-up, submission, re-editing, publication and dissemination usually takes a decade.

As a result, when attempting to introduce new technology, there is frequently a minimal or absent historical

evidence base. It is perceived that in the current financial climate this will be taken as justification not to support innovation in UK spinal surgery. The life expectancy of advice before it is superseded is short. This reduces the incentive for companies to support this type of research.

In addition many procedures that are currently being undertaken have a limited evidence base but as perceived by the authors of this report, seem from impression or cohort studies to be of possible potential value. It is unlikely that all of these will in the short term be assessed on an RCT basis. The alternatives are to discontinue commissioning these or to require the proponents to optimise their assessment process using recognised outcome measures and engage in studies for a defined period to justify or deny continued use. If the invitation to participate in such a process is rejected, then continued financing would reasonably be questioned.

It is recognised that in the current financial climate surgeons are unlikely to be permitted the time (by Trusts) to set up such a process properly with the necessary independent assessment of outcome. It is suggested that a process should be developed with HTA, clinical trials units and RDS to draft trial design, obtain ethical approval (if necessary for what is an audit of current practice), assess outcomes independently, collate the data and present and publish the results in collaboration with their surgical colleagues.

Within a three to five year time frame this should place all procedures on a more robust evidence base. To discontinue familiar current procedures on the basis of an absence of evidence to date would be to spurn a readymade opportunity both to identify procedures that may be of value and also to waste a potential lever to improve outcome assessment.

Many of these studies require networks of surgeons. Commissioners should look at a provider network in terms of its research capacity as an essential part of quality assessment.

RECOMMENDATIONS:

The Department of Health should ensure that NIHR and the new Academic Health Science Networks are receptive to the introduction of new spinal technology with input from the Spinal Surgical Societies, relevant Statutory Bodies (MHRA, NICE MTAC) and ABHI Spinal group to allow appropriate and timely innovation.

- The Research Networks are alert to providing support staff for recruitment to clinical studies in spinal disorders sponsored by implant companies.
- Commissioners should ensure that surgical services are only commissioned from units able to provide prospective outcome assessment of surgical procedures.
- Commissioners should ensure that each spinal network is involved in recruiting to at least one NIHR sponsored research project at all times.
- Commissioners should ensure that providers have the appropriate infrastructure to collect and publish outcome data for spinal interventions.
- Commissioners should ensure that Spinal Surgery Networks submit an annual audit report.
- NHSLA to deliver annual reports on spine related litigation.
- NIHR to consider special issues surrounding introduction of industry studies of new spine technology.

KEY DIRECTIONS OF FUTURE SPINE RESEARCH TO ENHANCE NHS DELIVERY:

1. Cohort study of the proposed classification systems (such as 'patient need groups') to investigate reliability of classification and outcomes, especially when applied to more severe pain and radicular pain.
2. Investigation of the adoption of CPP programmes and their impact on chronic pain. Investigations of optimum structure(s) of CPP programmes.
3. A trial of disc prolapse/sciatica patients comparing a stepped approach in primary care (HTA recommendation) versus early surgical opinion and access to rapid surgery where indicated. Research into stratification to identify risk factors for good non-operative outcome and poor outcome and subsequent treatment.
4. Natural history of degenerative conditions including degenerative or lytic spondylolisthesis and lumbar spinal stenosis.
5. Trials of non-operative care in lumbar spinal stenosis.
6. NHS Wide audit/registry of Cauda Equina Syndrome patients and pathway assessment with a view to improving current provision of clinical requirement.
7. Audit of NHSLA data on spinal related issues and methodology to identify area of high litigation activity and costs.
8. Trials of risk management programmes to reduce spinal litigation.
9. Audit of outcomes of intramedullary and intradural extramedullary primary spinal tumours to assesses outcome and inform a decision on whether concentration of services would be beneficial.
10. Audit of spinal infection with view to setting up study to compare intervention strategies and current coding reliability.
11. Audit of spinal deformity surgery for patients with cerebral palsy to assess regional variations and observation of outcome.
12. Trials of non-operative care for adolescent idiopathic scoliosis: Exercise therapy for adolescent idiopathic scoliosis (Commissioned by HTA 2011); Brace treatment.
13. Audit of spinal metastases management and strategies for developing management protocols for the future.
14. Trials to investigate operative and non-operative care in thoraco-lumbar fractures.
15. Trials to investigate optimum management of odontoid fractures in the elderly.

5.3 NICE QUALITY STANDARDS

The 2012/13 Operating Framework reaffirms the move towards an outcomes approach by the National Commissioning Board. It confirms that each of the five domains within the NHS Outcomes Framework will be supported by the Quality Standards being developed for the commissioning of services by NICE which will define what high-quality care looks like for particular pathways of care. Outcome measures to use as proxies for some of these are outlined in the Operating Framework and cover areas relevant to this review including cancer and long-term conditions.

One area where quality is already embedded into the contracting framework is via the CQUIN (Commissioning for Quality and Innovation) framework. This will become a more powerful drive for Commissioners to ensure the quality of services and outcomes that they commission and the range of specialties required to serve their catchment population as the percentage value of this quality increment rises to 2.5%.

Commissioners should be aware of the timeliness of response of a provider's service to reduce the delay to treatment of conditions that have the potential to progress to chronicity, i.e. persistent low back pain and radicular pain. If Commissioners decide not to fund or suspend such services for the management of spinal disorders they must be aware of the impact on the local community and have in place alternative treatment options for this cohort of patients. There will be a need for public consultation if they are contemplating such a move and in the Taskforce's opinion Spinal Services should be widely available and protected. Appropriate and timely treatment for many of these conditions helps to support the QIPP (Quality, Innovation, Productivity and prevention) strategy that underpins the new Health Service reforms.

RECOMMENDATIONS:

Commissioners

Local and specialised commissioners should ensure that contracts with spinal surgery providers include appropriate quality standards that include measures related to timely treatment.

5.4 NETWORKS

Like a number of services, Spinal Surgery currently sits, and will continue to sit, across this divide between specialist and non-specialist activity and therefore will continue to have multiple commissioners of the pathway. It also has to work within the trauma service and network and this has significant implications in terms of geography and on-call commitments. We are of the view that spinal networks must be executive networks and not merely advisory.

One of the challenges of having multiple commissioners is that unless there is close collaboration between and across them, then those commissioning downstream interventions may inadvertently affect the commissioning of upstream interventions. Even once a new coding definition is agreed, these interdependencies mean that a spinal commissioning network should be established so that all providers, specialities and commissioners can come together to strategically develop these complex multiple pathways to tackle the significant capacity planning issues that exists, but also to drive through a qualitative improvement in patients outcomes and the patient experience.

The further development of Networks remains a key component of the Department's plans for the NHS. This is particularly demonstrated by the work on Clinical Networks and Senates[48] that has followed on from the NHS Future Forum's workstream on clinical advice and leadership led by Dr Kathy McLean. The current programme is beginning to define the role of clinical networks and review their range, function and effectiveness, with the aim of providing the NHS Commissioning Board with a set of operating models for networks. The Taskforce's comments and recommendations should be seen as complementary to this project. Professor Keith Willett's work on Trauma Networks is also a key element.

[48] Networks can undertake a range of functions, including supporting improvements in pathways and outcomes of care. Clinical senates however, are intended to bring together a range of experts, professionals and others from across different areas of health and social care to offer access to independent advice about improvements in quality of care across broad geographical areas of the country.

COMPONENTS OF CLINICAL NETWORK

General Practice

This will be the first point of call for the majority of patients in a clinical network, although direct access to an MSK service is possible, the quality of service delivery is variable. The introduction of the STarT Back Tool for GP consultations is designed to identify whether the risk of a patient's back pain becoming chronic is low, medium or high. This should lead to the offer of the most appropriate level of treatment; those at greatest risk of becoming chronic being referred to low intensity CPP, those with the least risk being offered general advice re-mobility, work, exercise and simple pain relief.

Musculoskeletal service (MSK)

Ideally this service should consist of the following components:

- Physiotherapists or Nurse Practitioners trained in the management of spinal disorders and able to identify those patients with serious pathology.
- Access and ability to interpret appropriate imaging, to enable fast track surgical referral.
- Access to pain services closely linked to the MSK to allow for provision of approved interventional techniques.
- Access to a high intensity CPP programme (Fig 4.1 box 3).
- Access to reserved slots in spinal surgical clinics to fast-track surgical management and the investigation of potentially serious pathology.
- Supervision by a medically qualified consultant with a special interest in spinal disorders (this might be a spinal surgeon, rheumatologist or pain specialist).

Secondary care

The integration of an effective spinal triage service within an MSK should allow for the seamless referral of patients who may require more complex intervention. The evidence from those who work within an effective MSK is that only 7-8 % of patients referred to a spinal triage service are referred on without treatment.

Well-trained MSK professionals have a good track record in identification of patients with serious pathology.

The problem in most areas remains the patient presenting to the Emergency Department with serious symptoms that are not recognised. Cauda Equina Syndrome (CES) is still a major source of patient morbidity and litigation cost to the NHS. The aim of a network should be to eliminate this cost and lower the threshold for access to out of hours MRI scanning. All networks should have at least one site able to provide co-located 24/7 spinal imaging and treatment for patients with MSCC and CES where required. Other hospitals within the network providing MRI for spinal patients should be able to offer 12/24, 5/7, 8/24 weekend MRI to identify those patients requiring urgent but non-emergency radiotherapy or decompression due to malignant disease and avoiding unnecessary patient transfer in those not requiring such treatment. Making these services available will not require additional imaging equipment, but rather a willingness to collaborate across the network to organise out of hours provision.

For different spinal pathologies different secondary networks and personnel require to be developed. For each geographical area this requires definition of provider units and the posts within these with defined responsibility. This has for example been defined for MSCC through Acute Oncology Measures and implemented via the Cancer Networks and is subject to National Peer review (NCPR). This is also in development for spinal trauma. A similar

definition and process is required for infection, rheumatology, paediatric and adult deformity surgery.

Figures 5.1 and 5.2 are an example of each type of network

These are schematic networks demonstrating principle flows.

Detailed patterns will depend on local circumstances and facilities.

There will in practice be further cross-flows and complexity.

Figure 5.1 LOCAL SPINAL NETWORK

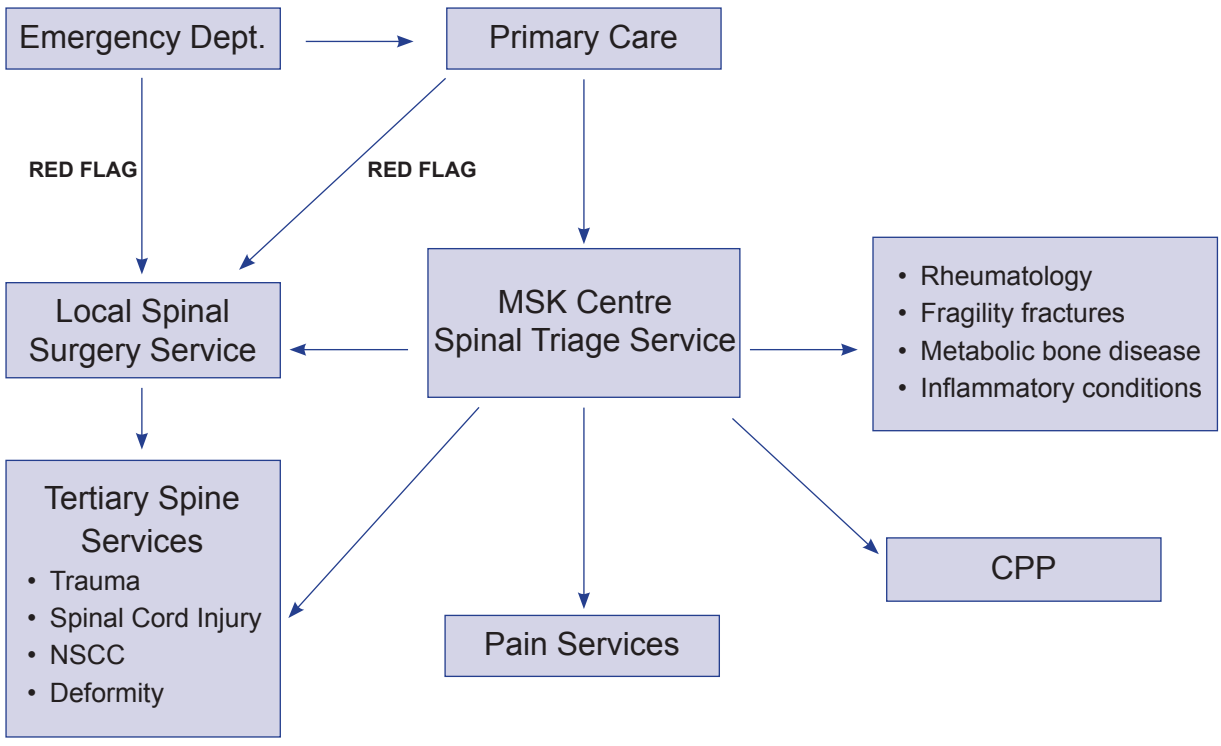
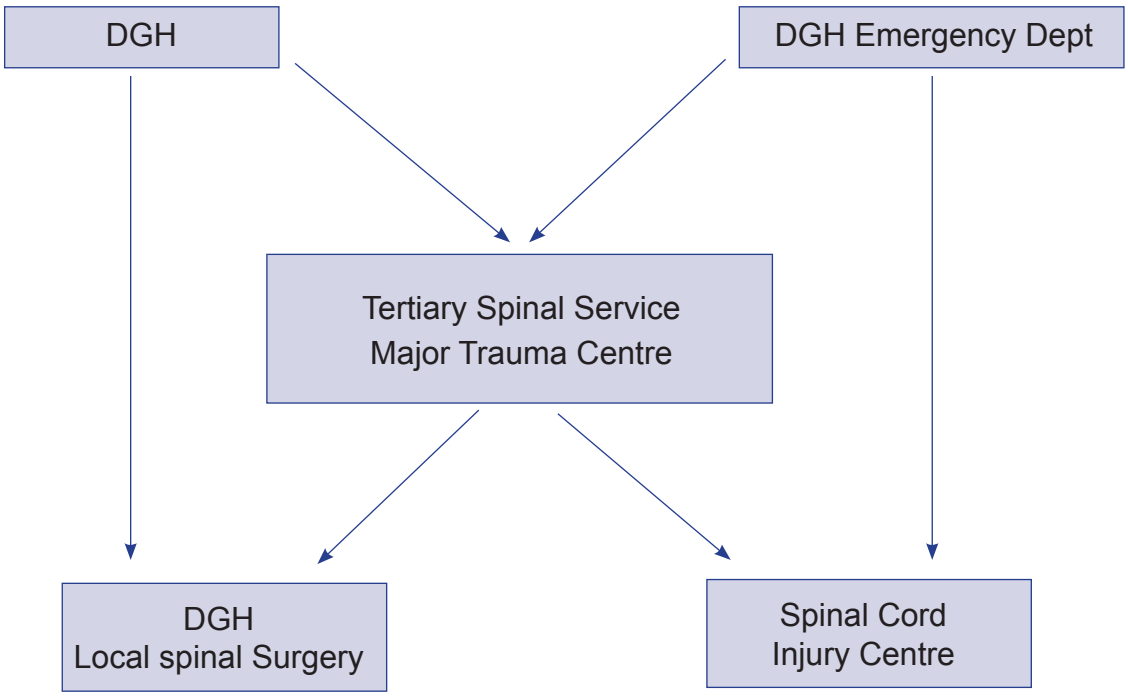


Figure 5.2 REGIONAL SPINAL NETWORK



RECOMMENDATIONS

Commissioners

- Local and specialised commissioners should ensure that supra-regional, regional and spinal networks are in place, taking account of the above guidance.
- Local and specialised commissioners should ensure that all providers of spinal services (including the private/third sector) that they commission from, irrespective of whether they are commissioned at CCG or specialist commissioning level, should be part of the local clinical network.
- Local and specialised commissioners should be responsible for commissioning the appropriate networks that can deliver safe (appropriately audited) and sustainable services for all patient groups to ensure good outcomes.

Review of the organisation and delivery of provision of spinal services should occur annually.

5.5 OUTCOME MEASURES

It is clear from the 2012/13 Operating Framework for the NHS in England that Outcomes will continue to feature as a key approach to monitoring service delivery. The framework builds on the assertion in the NHS Outcomes Framework that this framework will be used by the Secretary of State for Health to hold the NHS Commissioning Board to account and achieve levels of ambition where they have been agreed. The drive nationally is to ensure that the NHS as a whole tackles health inequalities and delivers health outcomes that are among the best in the world. It is therefore essential that spinal services push forward with the development of outcome measures, agreeing the indicators that need to be looked at and developing the use of patient reported outcome measures in measuring patient experience. This will also be important for revalidation.

The British Association of Spine Surgeons (BASS) formed a Registry Committee in 2010 of 34 UK Spinal Surgeons. They delivered the British Spine Registry (BSR), which went live on 28 May 2012. In the first week, just over 100 patients were added to the system nationally.

The British Spine Registry (BSR) is non-mandatory and free to all users. Data can be collected on all spinal conditions including degenerative, deformity, trauma, tumour and infection. The data collected will include:

- Initial assessment including diagnosis
- Operative details
- Complications
- Patient Reported Outcome Measures (PROMs): EQ-5D for all patients, Oswestry Disability Index and Visual Analogue Score (VAS) for lumbar conditions, Neck Disability Index and VAS for cervical conditions, European Cooperative Oncology Group score for tumours and Scoliosis Research Society-22 score and for deformity (ODI and VAS added for adult deformity)
- Data for multi-centre research projects can also be collected on the system with new 'forms' being developed for such projects

There are now numerous examples in the literature of the value of prospective cohort data collection in guiding good clinical practice and the British Spine Registry will hopefully analyse commonly performed spinal procedures to evaluate their effectiveness over time. The Registry will also support surgeon revalidation and may assist in the development of best practice tariffs.

Spine Tango (http://www.eurospine.org/p31000381.html) has evolved as an international system of spinal audit over the last 10 years. It is based in Switzerland and sponsored by Spine Society of Europe. Three large UK centres are using this system that allows international comparison. The Swedish Spine Register (http://www.4s.nu/patientsida_eng/index.html) provides another successful model.

RECOMMENDATIONS

Commissioners

- Local and specialised commissioners should ensure that centres collect operative data including complications, diagnostic and PROMs data that allow benchmarking in comparison of services across the country.

Department of Health

- The Department of Health should support the introduction and further development of the British Spine Registry.

5.6 IMAGING AND IMAGE TRANSFER

Imaging, and in particular MRI, is key in the investigation of patients with spinal problems. Treatable conditions including incipient Cauda Equina compression may be missed or the diagnosis delayed because MRI scanning remains a scarce resource.

MRI scanning is the gold standard for determining whether a patient has nerve root compression. Surgery for these patients is proven to be highly effective and there is a strong case for a low threshold for timely MRI investigation of patients with nerve root leg pain.

In emergency situations, rapid imaging is essential to inform decision-making. Tertiary centres offering emergency spinal surgery for trauma, malignant cord/Cauda Equina compression or similar conditions, require 24-hour access to both MRI and CT imaging. Other centres must ensure that they can image malignant spinal disease within a suitable time period, as indicated by the NICE recommendations, and if providing a trauma service, that 24 hour CT imaging is available.

There are ongoing problems in transferring CT and MRI images of patients referred to spinal surgeons when the imaging has been performed at a different centre, for example, a patient scanned at one hospital may require emergency transfer to a tertiary care or trauma centre for further management.

These issues cause major disruption and delay in patient treatment and require resolution. In the best interests of patient care and efficient use of NHS resources, clinicians managing patients with spinal disorders can reasonably expect relevant imaging and radiologist reports to be available to inform decision making. In emergency cases, a written report may not always be available and the lack of a report should not delay transfer of the images. Underpinning the image transfer process, a written agreement should exist between the referring and receiving organisations as to how the transfer will be affected and which processes and tasks are to be undertaken by which organisation. A back-up plan must also be agreed to cover situations where PACS system networks fail.

Images can be transferred between institutions on disc (usually CDs) but this carries a large number of disadvantages and electronic transfer should be the standard mechanism. Many NHS Trusts as well as other UK healthcare providers already take advantage of the Image Exchange Portal (IEP) to send images for MDT (multidisciplinary team) review or to support ongoing patient care at another organisation. All NHS Trusts are connected or in the process of connecting to the IEP, which offers PACS to PACS transfer of images and transfer of radiology reports. IEP also has its own image browsers, which can be used to view images outside the confines of a PACS system.

Difficulties can still be encountered when there is a failure of the referring and receiving Trusts to agree a process ensuring images and reports are transferred early enough to be available when the first opportunity to make management decisions presents.

Given the essential nature of imaging to clinical decision-making, the Taskforce recommends that Trusts within a network agree a formal protocol for such transfers. A sensible blueprint would be for Trusts to incorporate

requirements for transfer of patient images into their protocol for patient transfer, and similarly into a separate document covering a request for MDT or other opinion from an external organisation.

The protocol should clearly define responsibility for requesting the image transfer, including detailing that examinations are to be transferred. It should indicate which members of Trust staff should be contacted to request the transfer, by what means they should be contacted and, since image transfer is required to support ongoing emergency care, should allow for transfers to be requested and to take place at any time during a 24 hour period.

Trusts receiving images from external organisations may also need to define responsibilities for ensuring that the received images are suitably incorporated into their PACS system to allow the examinations to be viewed by the clinical team assuming responsibility for the patient.

It should be an assumed principle of care that relevant imaging should be automatically transferred when a patient is sent to another organisation for ongoing management. Circumstances will nevertheless still arise where image transfer is unsuccessful. If a PACS system has crashed and the patient is stable on arrival, it may be possible to wait for technicians to recover the system. In other situations, image transfer by other means may become necessary. This may require physical transfer of the imaging on CD media. In an emergency situation, organisations sending images by this means are encouraged to consider the use of unencrypted media in order to ensure the receiving clinical team can readily view the examinations.

RECOMMENDATIONS

Commissioners

- Local and specialised commissioners should ensure they procure spinal services from organisations able to demonstrate compliance with the recommendations to providers below and should be prepared to review such procurement when non-compliance is reported.
- Commissioners should ensure that providers who are not currently connected to IEP must ensure that they are linked to the system.
- Commissioners should ensure that providers agree protocols and procedures to be followed by their staff to efficiently ensure the delivery and/or receipt of imaging and radiology reports relevant to both the elective and emergency transfer of patients under their care. Protocols will define the responsibilities of both clinical and radiological staff and must support 24/7 transfer. Organisations likely to have to send their imaging to another centre should proactively - and in consultation with the receiving centre - produce such protocols ensuring that both parties retain copies of the original and any updated documentation and that all relevant staff understand their responsibilities.
- Commissioners should ensure that providers should make available home-viewing facilities for spinal imaging for consultant surgical staff. This does not require additional computer equipment but rather the provision of access to services that most trusts already provide.

5.7 WORKFORCE AND TRAINING ISSUES

5.7.1 Workforce issues

The exact number of medical professionals working in spinal surgery is currently unknown. The British Orthopaedic Association (BOA) conducted a spinal surgery survey in 2011 that is considered to be representative of the T&O workforce numbers involved. The neurosurgical workforce has been assessed through discussions with the Society of British Neurosurgeons (SBNS) and the RCS Special Advisory Committee (SAC) representative but with no clear data.

The neurosurgery representatives believe at least 75% of the consultant workforce performs spinal surgery regularly. This would suggest a headcount in excess of 148 (Information Centre Census 2007). Again, FTE would be lower than headcount. The neurosurgery representatives also indicated that most neurosurgical units have at least one pure spinal surgeon, suggesting that there would be at least 40 neurosurgeons committed specifically to spinal work.

A survey of Orthopaedic spinal surgeons undertaken by the British Orthopaedic Association in 2008

showed that the ratio of spinal surgeons to the population in England varied from 1:215,315 to 1: 325,976.

There was a progressive rise in intention to retire of between 30-40% of existing consultants by 2018.

Generally there is a view that while professional indemnity costs and the prevalence of litigation in spinal cases are a deterrent to those choosing spinal surgery as a specialty, the market realities of the shortage in spinal surgeons, particularly in the context of looming clinical unemployment in other specialties, are likely to eventually lead to an increase in those choosing the discipline. Dual Consultants working on complex and long cases and the mentoring of newly appointed consultants, will help overcome many of the workforce problems.

Co-existing Orthopaedic and Neurosurgical spinal units in any one city should establish close-working relationships to enable Consultant-led spinal on-call rotas to be established and to allow GPs, screening services and Commissioners to communicate with one secondary care provider.

The following comments were received from consultants by the British Orthopaedic Association in its' survey of 2011. They reflect the problems currently affecting the delivery of spinal services nationally.

> "Since the retirement in August 2009 of our consultant colleague with an interest in spinal surgery, we now have no in-house spinal service."
>
> "We are finding it difficult to sustain our spinal emergency service. Many of our local trusts have little input into spinal cases and we are contacted on a regular basis by very junior staff."
>
> "Spinal service located on two sites MRI only available 24/7 on one site."
>
> "Myself and a colleague provided a limited local service that stopped 3 years ago. The service was well regarded and ceased for non-clinical reasons."
>
> "All our neighbouring trusts have abandoned their own spinal services - even for low back pain - and their patients, some of whom were listed for surgery, have been dumped on our trust which is still open for referrals though our service is at breaking point."

"Our extended role physiotherapist, who dealt exclusively with spine related problems to the exclusion of all else, has just retired. To date she has not been replaced."

Workforce utilisation, workforce succession planning, training and education all require a robust planning approach. Mapping the workforce issues for developing an appropriate workforce strategy and succession plan has been particularly difficult. Further work is required to take this forward at local and regional level.

Support staff

In the UK a specific co-ordinator role for metastatic spinal cord compression was proposed (NICE MSCC November 2008) and in some centres instituted. There is a view that there would be a significant service improvement if this role was extended/implemented, within all spinal surgical centres, to cover all spinal emergency/urgent referrals within normal working hours thereby freeing trainees/fellows to focus on their education whether in clinic or theatre. This would still allow trainees/fellows to continue to gain experience in assessment and spinal triage with their on-call commitment outside normal working hours.

There is potential for this role to be developed as part of an ANP two-year master's degree (in line with current government proposals) with a focus on the clinical skills of spinal assessment and management.

Appropriately trained AHPs from another discipline may also fill this role.

The suggested role of Acute Spinal Coordinator is particularly important, given the current recommendations for managing acute oncology and could function alongside physiotherapists running full triage and treat clinics, pain clinic support nurses and paediatric deformity ANP roles.

If these roles, with associated training and national skills profiles, were in place in all spinal centres, this would have a major effect on overall service delivery for both acute and elective work.

RECOMMENDATIONS

Commissioners

- Specialised commissioners should ensure the establishment of adequate provision and training of acute spinal coordinators and related posts.
- Local and specialised commissioners should ensure that there is a timetable for audit and governance between primary and secondary care across the pathway and across organisations within the network. Trusts should provide one day per month for shared training and audit.
- Local and specialised commissioners should recognise in contracts that technical and professional development has resulted in new surgical solutions and that the costs of multi-consultant working will need to be taken into consideration.

5.7.2 Training for spinal surgery

There is no unified training for dedicated spinal trainees. The number of SpRs in Trauma and Orthopaedics and Neurosurgery are 1,791 and 259 respectively (Information Centre Census 2007). Of the 140 T&O trainees who responded to the 2008 British Orthopaedic Association survey, 13 (9.3%) said they intended to pursue a career in spinal surgery.

The SAC in orthopaedic surgery has increased the emphasis on the knowledge of the spine and spinal conditions for orthopaedic trainees taking the exit exam. However, improvements in the training of spinal surgeons in neurosurgery and orthopaedic surgery are required if the career pathway is to become more attractive. The provision of essential training equipment, i.e. operating microscopes and training time in theatre both for trainees and theatre staff must be made.

Furthermore, a recent survey of orthopaedic trainees has shown that they may have to complete several (three or more) pre/post CCT fellowship posts before obtaining a Consultant appointment[49].

It is therefore important that plans to introduce more integration of spinal training are implemented e.g. cross specialty fellowships and interface programmes.

The consideration of issues around training and education and succession planning has not featured high enough on the corporate planning agenda. This has lead to experienced consultants moving around the service, leaving Providers either to find alternative resource to bridge the gap - often on a temporary basis - or to reduce or redirect referrals. In some cases services have been restricted to certain types of procedure.

Consideration needs to be given to how clinicians can best share training, education, audit and governance between primary and secondary care across the pathway and across organisations. Issues that require resolution include:

- The time available for shared clinical training and audit
- The assessment of spinal surgeons as defined by competence (rather than numbers of procedures undertaken alone)
- Arrangements for pre and post-CCT training (for example spinal fellowships and overseas postings). Two years fellowship training at post-CCT level is recommended by spinal societies
- The costs associated with speciality spinal training pre and post CCT (for example courses on fresh cadaveric material are extremely expensive)
- Mentorship of newly appointed consultants and provision of support from senior colleagues when first undertaking more complex procedures

RECOMMENDATIONS

Commissioners

- Commissioners should ensure that providers recognise the need for fully trained spinal surgeons and this should be defined by assessed competence rather than numbers of procedures undertaken alone.
- Commissioners should guarantee that providers ensure that spinal surgeons are able to provide a full range of decompression and basic reconstructive techniques at completion of training together with some subspecialty module training. By the time they are appointed, all consultants should be competent in the assessment, management and surgery of 80-90% of spinal emergency presentations.
- Commissioners should ensure that Neurosurgical and Orthopaedic Spinal Surgeons within the same city should work closely together to provide an on-call service and improve commissioning arrangements.
- Commissioners should make certain that providers ensure that newly appointed consultants are mentored

[49] The new "lost tribe": post -CCT employment in trauma and orthopaedics. Bulletin of the Royal College of Surgeons of England N07 Vol.94, July 2012,246-248

and when necessary are supported by senior colleagues when first undertaking more complex procedures. Trusts should recognise these requirements. It may be necessary to consider proleptic appointments of consultants for specific surgical areas.

- Commissioners should ensure that providers in Spinal Surgical centres consider appointing acute spinal coordinators and other suitably trained paramedical support staff. Or, if not available, make proleptic appointments of paramedical staff to train in spinal surgery support roles.

PROFESSIONAL BODIES/TRAINING

Workforce issues - Training for spinal surgery

- The relevant professional bodies and Health Education England should consider issues around training and education and agree plans for clinicians to share training and education.
- The relevant professional bodies should ensure that pre-CCT spinal training is provided. For this to be adequate spinal surgery trainees should do a 48-hour working week (including on-call).
- The relevant professional bodies should require appropriate additional training at post-CCT fellowship level and a posting in a recognised centre (either in the UK or overseas) for a second fellowship year should be considered.
- The direct costs associated with speciality spinal training should be reviewed and recognition needs to be given to the costs of the necessary courses that will be required during the training period in order to satisfy the curriculum (for example, courses on fresh cadaveric material are extremely expensive). This will need to be recognized for both pre-CCT and post CCT training by the education authorities and hospitals providing fellowship training.
- The indirect costs associated with training also require recognition and there should a discussion regarding separate funding from top-sliced monies.

5.8 PBR/NATIONAL TARIFF

HRGs group ICD-10 and OPCS codes together such that each group contains procedures or diagnoses considered to cost approximately the same whilst maintaining clinical relevance. To obtain the HRGs for spinal procedures, 3 estimates of costing were used for each procedure:

- Time in theatre – approximately £1000 per hour
- Length of stay – approximately £300 per day
- High cost consumables (these could not be excluded). These are mostly implants

The HRGs are grouped into Chapters for clinical relevance and Spinal procedures and diagnoses are within the Orthopaedic Chapter H. Spinal procedures were further divided into extra-dural (HC01 to HC06) and intra-dural (HC07 to HC12). In the initial design, the number of HRGs were limited so it was decided that high cost procedure-based HRGs would be created across the whole of Orthopaedics and a number of Spinal procedures fall into these HRGs – HR01 (highest cost) to HR06 (next HRG up from HC01). HC20, 21, 26-32 are the diagnostic based HRGs i.e. patients admitted to hospital with primarily a spinal diagnosis who do not undergo a surgical procedure.

HRGv4 are under constant review by the Orthopaedic Expert Working Group and new codes are placed into their appropriate HRG. There should be a continued emphasis on clinicians working with their hospital coders to improve the quality of the HES data. Continued training for clinical coders in the complexity of spinal coding is crucial.

The Specialised Spinal Services Clinical Reference Group has just submitted a scoping document based on the Specialised Spinal Services National Definition Set (No. 6) version 3 defining which OPCS codes are recommended to be commissioned by the National Commissioning Board (specialised services) from April 2013 and which OPCS codes will continue to be commissioned locally by the newly formed Clinical Commissioning Groups (non-specialised services). On careful review of the Specialised Spinal Services National Definition Set (SSNDS), some of the OPCS codes defined as 'maybe' specialised and currently excluded from the list are considered to be definitely specialised. The OPCS codes have been reviewed by 8 spinal surgeons and the results are shown in Appendix 6. This process revealed a number of OPCS codes for procedures no longer performed and a number of duplicate codes.

In the future, the National Commissioning Board is likely to commission specialised services (OPCS codes considered as specialised according to a revised SSSNDS) from NHS Trusts currently performing this specialised activity in reasonable volume – 'Specialised Centres'. This is shown in the Table.

Specialised OPCS code	Specialised Centre	Commissioned by National Commissioning Board or local commissioning
Yes	Yes	National
Yes	No	Local
No	Yes	Local
No	No	Local

For this process to be successful, a full costing exercise of the procedures considered specialised needs to be completed. Also the NHS Information Centre must be involved to produce changes to the Local Payment Grouper for 2013/14 to allow flagging of the specialised procedures performed in the designated hospitals.

PbR re-introduced a specialised spinal top-up in April 2011 to add 32% to tariff for specialised procedures. This came as a result of a health economic assessment. However, only 'Specialised Centres' can claim specialised services top-up and many of the operations defined as specialised are performed in many centres not defined as offering specialised services. The Taskforce believes that HRGv4 is granular enough such that by increasing the tariff for the more expensive HRGs (containing the specialised services OPCS codes); the specialised services top-up can be discarded allowing all hospitals to be paid adequately for the operations they perform. This would have no additional cost.

An additional problem with PbR in 2012/13 is a change in the list of complications and co-morbidities. Many HRGs are currently divided into 3 by a suffix, 'A', 'B' or 'C' depending on which, if any, co-morbidities are present. The current lists are long allowing many procedures to be coded with an 'A' or 'B' suffix attracting a higher tariff. The new list for 2012/13 is a single, much shorter list meaning that a number of procedures previously coded with an 'A' or 'B' suffix will become a 'C' thereby reducing the level of payment. It is felt that the changes in tariff do not reflect this.

It is considered that HES data underestimates the cost of spinal surgery, especially complex spinal surgery and this has been responsible for the closure or restriction of spinal services in some Trusts. Service Line Reporting (patient level cost data) is urgently required for spinal surgical procedures across a range of hospitals to guide the PbR team in tariff setting for spinal HRGs.

RECOMMENDATIONS

Commissioners

- The NHS Commissioning Board should review the Trusts defined as Specialised Spinal Centres based on which Trusts perform procedures considered specialised as defined by a review of the Specialised Spinal Services National Definition Set. It should be noted that this might become an aspect of the CRG's work.

NHS

- The Department of Health, and thereafter MONITOR and the NHS Commissioning Board, should ensure that the Specialised Spinal Top-up is added to the HRGs that contain these specialised procedures.
- The Department of Health should make use of Patient Level Costing Information System data to inform the setting of the tariff for spinal surgical procedures. It is noted that this is beginning as a part of a project led by the PbR team working with key musculoskeletal stakeholders in this area – a development that is welcome and timely.
- The Orthopaedic Expert Working Group and the NHS Information Centre should review the Spinal OPCS codes and make recommendations for retirement of obsolete and duplicate codes to allow more accurate coding and improve HES data quality.
- The NHS Information Centre needs to produce changes to the Local Payment Grouper for 2013/14 to allow flagging of the specialised procedures performed in the designated hospitals.

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General Background

DATA

- National specialised services definition sets for spinal and specialist orthopaedics
- Hospital Episode Statistics

WORKFORCE INFORMATION

- Career intentions in Spinal Surgery survey from BOA
- Survey of Spinal services in England – NHS Management Board

CLINICAL GUIDELINE INFORMATION

- NICE guidelines CG88 (2009) on Low back pain: early management of persistent non-specific low back pain
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PREVIOUS REVIEWS

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COMMISSIONING TEAM

- Organising quality and effective spinal services for patients – Spinal taskforce 2010
- Review of Spinal services in the West Midlands – July 2010 needs assessment review

ONGOING REVIEWS

- Birmingham provider review on paediatric deformity – 2011

RELATED BACKGROUND READING

- Background reading " The surgical management of metastatic spinal cord compression"
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List of footnotes

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Abbreviations

BED biological equivalent dose

CLRN Comprehensive Local Research Network

CNS clinical nurse specialist

CT computed tomography

DH Department of Health

EBRT external beam radiotherapy

EuroQol EQ 5-D is general quality of life index

GDG guideline development group

HRQoL health related quality of life

HTA Health Technology Assessment

ICER incremental cost effectiveness ratio

LAS Linear Analogue Scale

MDT multi-disciplinary team

MRI magnetic resonance imaging

MSCC metastatic spinal cord compression

NCC-C National Collaborating Centre for Cancer

NDI neck disability index

NICE National Institute for Health and Clinical Excellence

NIHR National Institute for Health Research

ODI Oswestry Disability Index

OR odds ratio

PET positron emission tomography

PPI proton pump inhibitors

QALY quality adjusted life years

RBE radio biological equivalent

RCT randomised controlled trial

RR relative risk

RT radiotherapy

SRE skeletal related event

Glossary

Cauda Equina

A bundle of spinal nerve roots that arise from the bottom end of the spinal cord. The cauda equina comprises the roots of all the spinal nerve roots below the level of the first lumbar (L1) vertebra, namely the sacral and coccygeal nerves.

Cement

Usually poly methyl methacrylate (PMMA) - a biologically well tolerated malleable paste that hardens within minutes of mixing with a catalyst. It may be injected into vertebral bodies to treat fragility fractures (osteoporosis) or reinforce vertebrae weakened by tumour.

Chemotherapy

The use of drugs that kill cancer cells, or prevent or slow their growth.

Clinical oncologist

A doctor who specialises in the treatment of cancer patients, particularly through the use of radiotherapy, but may also use chemotherapy.

Cohort studies

Research studies in which groups of patients with a particular condition or specific characteristic are compared with matched groups who do not have it.

Decompression

Removal of tissues surrounding the nerve elements of the spine to prevent loss of, or in the hope of regaining nerve function. This is usually achieved by removing bone and /or soft tissue from the back of the spine in the low back or from the front or back of the spine in the neck.

Deep venous thrombosis (DVT)

A blood clot that forms in a vein resulting in obstruction of venous flow, most common clinically in the lower extremities.

Embolisation

Movement of solid material(s) inappropriate to location within blood vessels with the potential to block blood supply in the distribution of that blood vessel. This may be used therapeutically before surgery to decrease the potential bleeding at an operation site.

Epidemiology

The study of populations in order to determine the frequency and distribution of disease and measure risks.

Epidural

The space situated within the spinal canal, on or outside the dura mater.

Extralesional

Usually pertaining to removal of tumours, in this instance not entering the tumour to avoid spreading tumour cells to adjoining tissues.

Histological

Relating to the study of cells and tissue on the microscopic level.

Intensity modulated radiotherapy (IMRT)

In intensity modulated radiation therapy (IMRT), very small beams, or beamlets, are aimed at a tumour from many angles. During treatment, the radiation intensity of each beamlet is controlled, and the beam shape changes hundreds of times during each treatment. As a result, the radiation dose bends around important healthy tissues in a way that is impossible with other techniques. Because of the complexity of these motions, physicians use special high-speed computers, treatment-planning software, diagnostic imaging and patient-positioning devices to plan treatments and control the radiation dose during therapy. (Mayo Clinic definition).

Intensity modulated Proton Therapy (IMPT)

Similar to IMRT only using Protons (particles) rather than x-ray beams.

Intralesional

Usually pertaining to removal of tumours, in this instance entering the tumour as part of the process of removal, potentially spreading tumour cells to adjoining tissues.

Kyphosis

Kyphosis is an increased forward angulation of the spine when looking at the spine from the side.

Kyphoplasty

A minimally invasive spinal surgery procedure used to treat painful, progressive vertebral compression fractures (VCFs). Kyphoplasty involves the use of a device called a balloon tamp to restore the height and shape of the vertebral body. This is followed by application of bone cement to strengthen the vertebra.

Laminectomy

A surgical procedure that is performed to alleviate the pain caused by neural impingement. The laminectomy surgery is designed to remove a small portion of the bone (Lamina) overlying the spinal cord and nerve root.

Metastases/metastatic disease

Spread of cancer away from the primary site to somewhere else via the bloodstream or the lymphatic system.

Metastatic spinal cord compression (MSCC)

Pressure on the nerve elements within the spinal canal resulting from tumour or fracture of vertebra (e) infiltrated by tumour that may result in alteration or loss of nerve function (if severe causing paralysis and loss of bowel and bladder control).

Myelography

Myelography is an imaging examination that shows the passage of contrast material in the space around the spinal cord (the subarachnoid space) using a real-time form of plain x-ray (radiography) called fluoroscopy, in which organs can be seen over many seconds (rather than in the static image called a plain x-ray or radiograph).

Non-Specific Spinal Pain

Non-Specific spinal pain is tension, soreness and/or stiffness in the spine for which it isn't possible to identify a specific cause. Several structures in the spine, including joints, discs and connective tissues may contribute to symptoms. Pain may refer to the limbs, but the spinal pain predominates and neurology is normal.

Opioids

A chemical substance that has a morphine-like action in the body. The main use is for pain relief.

Osseo-ligamentous

Relating to bone and connected tissues. For spinal purposes the bones, joints, discs and ligaments of the spine.

Osteoporosis

A reduction in bone mass, leading to fractures after minimal trauma.

Palliative care

The active holistic care of patients with advanced, progressive illness. Management of pain and other symptoms and the provision psychological, social and spiritual support is paramount. The goal of palliative care is achievement of the best quality of life for patients and families. Many aspects of palliative care are also applicable earlier in the course of the illness in conjunction with other treatments.

Paraplegia

Paralysis of the legs and lower part of the body. Usually accompanied by loss of bowel and bladder control and sexual function.

Percutaneous

Performed through the skin, as injection of radio-opaque material in radiological examination or the removal of tissue for biopsy accomplished by a needle.

Positron emission tomography (PET)

A specialised imaging technique using a radioactive tracer to produce a computerised image of metabolic activity in body tissues and find abnormalities. PET scans may be used to help diagnose cancer, to see how far it has spread and to investigate response to treatment. Since PET looks at function, it is often combined with CT [PETCT] that reveals the underlying structure.

Prognosis

A prediction of the likely outcome or course of a disease; the chance of recovery or recurrence.

Psychological support

Professional support that can help people with a wide range of psychological problems such as anxiety and depression, and can provide emotional assistance during times of distress.

Pyogenic

Pus forming - descriptive of a type of infection caused by specific types of bacteria.

Radicular pain

Pain in a nerve root distribution, typically extending down the arm, round the trunk or the leg.

Radiculopathy

Where root compression is more pronounced there may be alteration of sensory function (feeling) or motor function (weakness) in the distribution of that nerve.

Radioisotope

A version of a chemical element that has an unstable nucleus and emits radiation during its decay to a stable form. Radioisotopes have important uses in medical diagnosis, treatment, and research. A radioisotope is so-named because it is a radioactive isotope, an isotope being an alternate version of a chemical element that has a different atomic mass.

Radiotherapy

The use of radiation, usually plain X-rays or gamma rays, to kill cancer cells and treat tumours.

Randomised controlled trial (RCT)

A type of experiment that is used to compare the effectiveness of different treatments. The crucial feature of this form of trial is that patients are assigned at random to groups which receive the interventions being assessed or control treatments. RCTs offer the most reliable (i.e. least biased) form of evidence of effectiveness.

Scoliosis

Scoliosis is a lateral curvature of the spine to the right or left when looking at the patient from behind and is associated with rotation of the bones of the spine (vertebrae).

Spinal cord pain

Neurogenic pain-radicular pain: Pain arising from neural irritation, compression or damage, usually in the case of MSCC by direct pressure or indirect vascular effects to disturb neurological function and cause pain of a typical nature and recognisable distribution (band-like deep-seated aching discomfort in the case of nerve root, burning cold indescribable in the case of the cord with or without sensory disturbance or weakness in a distinct clinical pattern reflecting the level nature and extent of neurological compression).

Spinal deformity

Scoliosis, kyphosis or a combination of the two.

Spinal instability

Clinical stability definition: The ability of the spine under physiologic loads to limit patterns of displacement so as not to damage or irritate the spinal cord or nerve roots and, in addition, to prevent incapacitating deformity or pain due to structural changes.

Description and Examples: Any disruption of the spinal components (ligaments, discs, facets) holding the spine together will decrease the clinical stability of the spine. When the spine loses enough of these components to prevent it from adequately providing the mechanical function of protection, surgical or other measures are taken to reestablish stability.

Spinal shock

A state of transient physiological (rather than anatomical) reflex depression of cord function below the level of injury with associated flaccid areflexia loss of all sensory and motor function.

Supine

Lying on the back.

Supportive care

Care that helps the patient, partners, carers and their family to cope with cancer and treatment of it – from pre-diagnosis, through the process of diagnosis and treatment, to cure, continuing illness or death and into bereavement. It helps the patient to maximise the benefits of treatment and to live as well as possible with the effects of the disease. It is given equal priority alongside diagnosis and treatment.

Tetraplegia

Paralysis of all four limbs, both arms and both legs, as from a high spinal cord accident or stroke. Severe or complete loss of motor function in all four limbs which may result from brain diseases; spinal cord diseases; peripheral nervous system diseases; neuromuscular diseases; or rarely muscular diseases. The locked-in syndrome is characterized by quadriplegia in combination with cranial muscle paralysis. Consciousness is spared and the only retained voluntary motor activity may be limited eye movements. This condition is usually caused by a lesion in the upper brain stem that injures the descending cortico-spinal and cortico-bulbar tracts.

Thoracotomy

An incision into the chest.

Vertebroplasty

Vertebroplasty is an image-guided, minimally invasive, interventional therapy used to strengthen a broken vertebra (spinal bone) that has been weakened by osteoporosis or, less commonly, cancer. Percutaneous vertebroplasty involves the injection of acrylic bone cement into the vertebral body in order to relieve pain and/or stabilise the fractured vertebrae and in some cases, restore vertebral height.

Appendices

APPENDIX 1

SPINAL TASKFORCE MEMBERSHIP AND ORGANISATIONAL REPRESENTATION

- John Carvell – Emeritus Consultant Orthopaedic and Spinal Surgeon and Taskforce Chair, British Orthopaedic Association
- Alistair Stirling – Consultant Spinal Surgeon, Royal Orthopaedic Hospital Birmingham, Lead Clinician NICE CG75 Metastatic Spinal Cord Compression, Foundation Tutor Spinal Surgery Royal College of Surgeons
- Charles Greenough – Consultant Orthopaedic and Spinal Surgeon, Society for Back Pain Research
- Ashley Cole – Consultant Orthopaedic and Spinal Surgeon, Orthopaedic Expert Working Group
- Tim Pigott – Consultant Neurosurgeon, British Association of Spine Surgeons and Society of British Neurological Surgeons
- Tim Germon – Consultant Neurosurgeon, British Association of Spine Surgeons
- Mike Millen – Senior Commissioning Manager, London Specialised Commissioning Group
- Piers Young – NHS IMAS Intensive Support Team
- Jeremy Fairbank – Professor of Spinal Surgery, Oxford University; Consultant Orthopaedic and Spinal Surgeon; Former President British Scoliosis Society; Chairman UK Spinal Societies Board.
- Nigel Henderson - Consultant Orthopaedic and Spinal Surgeon, British Orthopaedic Association
- Joan Hester - Consultant in Pain Medicine, The British Pain Society
- Penny Venables – Chief Executive, Royal Orthopaedic Hospital NHS Foundation Trust, Birmingham, Specialist Orthopaedic Alliance
- Geoff Hide – Consultant Musculoskeletal Radiologist, British Society of Skeletal Radiologists
- Sheila Dixon – Department of Health statistician
- Augustine Pereira - Consultant in Public Health Medicine, NHS Norfolk and Waveney
- Elaine Buchanan - Consultant Physiotherapist, Oxford University Hospital NHS Trust
- Mathew Shaw – Consultant Orthopaedic and Spinal Surgeon and Clinical Director, Royal National Orthopaedic Hospital NHS Trust
- Steve Washbourne – Acting Director, West Midlands Specialised Commissioning
- Louise Jackson – Data Analyst, West Midlands Strategic Health Authority
- Rachel Yates – Chief Officer, Specialist Orthopaedic Alliance, Payment by Results Orthopaedic Working Party
- The Taskforce acknowledges the contribution by Dr Richard Smith Consultant Rheumatologist Salisbury NHS Foundation Trust

APPENDIX 2

TERMS OF REFERENCE FOR THE NATIONAL REVIEW OF SPINAL SURGERY PROVISION UNDERTAKEN BY THE DEPARTMENT OF HEALTH SPINAL TASK FORCE – UPDATED JUNE 2011

Purpose

The purpose of the review is to undertake a national review to identify the current provision and future need for specialised and non-specialised spinal surgery. It will identify variability in current service provision and inequalities in access to specialised surgery including retrieving and recommending models of commissioning arrangements.

Exclusions

The review will exclude any review of Spinal Cord Injuries Services as these services are being looked at elsewhere.

Key objectives

1. To upgrade, disseminate and ensure implementation of the guidelines and appendices on "Organising Quality and Effective Spinal Services for Patients" published by the DH in March 2010.
2. To establish a map of existing services in conjunction with the Orthopaedic Alliance, British Orthopaedic Association, and the Society of British Neurological Surgeons with support from Specialist Commissioning organisations.
3. To identify gaps in provision across England and to identify variances in access to the full range of spinal services.
4. To establish the extent of the future needs of spinal patients and demand for services in conjunction with the DH.
5. To review and identify gaps in associated services required to support spinal surgery e.g. paediatric intensive care unit beds, neurophysiology services, orthotics, etc.
6. To establish a map of commissioning arrangements for spinal services in conjunction with local PCT and specialist commissioners and assist commissioners in redesigning and re-establishing spinal services where there are gaps or where services have been withdrawn.
7. To recommend those services that should become 'designated services' to the National Commissioning Board and Monitor. (Note – this has not been undertaken as the whole notion of what is 'designation' is not yet finally confirmed).
8. To agree common pathways of care for commissioners that ensure vertically integrated care pathways between GP commissioners and the providers of secondary spinal services including pre and post discharge arrangements.
9. To review current service provision with a view to providing recommendations to ensure more effective use of resources across the system linked into QIPP initiatives.
10. To review the need for specialist commissioning arrangements for spinal services in conjunction with DH and local Specialist Health Authorities.

11. To define specialised spinal services linked to review of those identified in the National definition sets.

12. To develop tariffs which reflect the cost of providing complex spinal services in conjunction with the PBR team from the DH to include reviewing the aspects of spinal work that remain in tariff and ensure appropriate linkages to HRGs in conjunction with the work program of the Strategic Orthopaedic Alliance with the DH PBR team.

13. To determine the medical and associated workforce requirements for spinal services and surgery in the future taking into account forthcoming retirements and growth in demand.

To ensure that systems and funding are in place to provide adequate and appropriate training for all personnel including General Practitioners, Surgeons, Radiologists, Pain Specialists, Psychologists, Spinal Triage Practitioners, Orthotists, Neurophysiologists, Physiotherapists and Nurses required to provide first class services to patients.

APPENDIX 3

SPINAL TASKFORCE SUBMISSION TO THE NICE QUALITY STANDARDS ENGAGEMENT EXERCISE

National Institute for Health and Clinical Excellence

NQB QS engagement exercise 15th August to 14th October 2011

STAKEHOLDER COMMENTS

Please enter the name of your registered stakeholder organisation below.	
Stakeholder Organisation:	National Spinal Taskforce (A group commissioned by Sir Bruce Keogh to advise on the commissioning of spinal services – Terms of Reference and membership attached) includes representation from The British Orthopaedic Association, The Society of British Neurological Surgeons, The British Association of Spine Surgeons, The British Scoliosis Society, The British Pain Society, British Society of Skeletal Radiologists, The Specialist Orthopaedic Alliance, The Chartered Society of Physiotherapy and The London Specialised Commissioning Group.
Name of commentator:	John Carvell, Emeritus Consultant Orthopaedic and Spinal Surgeon and Taskforce Chair

ORDER NUMBER *(For internal use only)*	**QUESTION NUMBER** *Please state the question number you are responding to or 'general' for other comments*	**COMMENTS** *Please insert each new comment in a new row. Please do not paste other tables into this table, as your comments could get lost – type directly into this table.*
1	General	We are of the view that the management of spine related leg pain (lumbar radicular pain) should be formally addressed by NICE and that guidance would be of great benefit. This condition affects 3-6% of the population and currently there are no UK guidelines. The management of this condition consumes much resource within primary and secondary care and is responsible for considerable cost, both medically to the wider NHS, and socially.
2	General	The prognosis of appropriately managed lumbar radicular leg pain is favourable. Delays in treatment for this large group of patients, many of whom are in the middle years of life, may lead to chronicity, unemployment, and social breakdown with obvious financial burdens for families and the State. Those with severe persistent symptoms, (30%) continue to consume significant healthcare resources.

3	General	A range of professionals including general practitioners, rheumatologists, pain specialists, surgeons, physiotherapists, chiropractors, osteopaths and alternative therapists take clinical responsibility for diagnosis and treatment. There is no agreed pathway advising on which treatments (information and advice, pharmacology, physical therapies, interventional therapies or surgical intervention) should be delivered, when, for how long or for which subgroups. As a result there is considerable variation in the management of radicular pain: across and within regions. Patients who receive multiple treatments accumulate considerable cost. Moreover, the decisions that some groups take are driven by imperatives other than clinical evidence.
4	General	Though significant, secondary care interventions represent a small proportion of the overall resource committed to managing this condition. Analysing Hospital Episode Statistics (HES) data for 2010/2011 it has been possible to ascertain that there were 76,304 surgical decompressions or discectomy and injections of therapeutic substances around the spinal nerve root relating to lumbar radicular pain. Of these 11,674 decompression procedures were carried out for spinal stenosis.
5	General	Timely intervention can be defined in order to restore many in this patient population promptly to full function and work. Evidence from randomised control trials has demonstrated that early surgery (six to eight weeks from the onset of symptoms) can be a highly cost effective solution in many cases.
6	General	It is urgent that such guidance in the management of lumbar radicular pain is produced to complement the recently published NICE Guidance concerning the management of low back pain. There is considerable confusion amongst many commissioners and a proportion of GPs between these conditions and the low back pain guidance is being transferred to patients who present with lumbar radicular pain. These are very different conditions with very different algorithms and this confusion is leading to problematic commissioning and inappropriate clinical management.
7	General	Patients with lumbar radicular pain are often denied access to appropriate treatment because of this failure to appreciate the distinction between lumbar radicular pain and non-specific low back pain. This situation is currently exacerbated by the increasingly widespread application of rationing of procedures deemed to be of "low clinical value". There is additional potential for cost saving by refining indications to allow appropriate timely intervention and discouraging ineffective and/or prolonged treatments.

8	Organisation of services	The type and level of service provision is important to ensure that appropriate clinical decisions are made and the patient progresses along an established and effective pathway. This would help local populations to improve their service and the outcomes for patients. It is important to define who, and with what level and type of training and competencies, should be responsible for clinical decisions and patients' progression.
9	Urgency for action	The number of patients presenting to secondary care for all spinal conditions is increasing and this is leading to longer referral to treatment times with the risk of creating chronicity where it need not exist. The objective is to select those who will benefit from early referral for a surgical opinion.
10	Networks	Networks are crucial to the proper provision of care for these patients. Many parts of the country no longer have local spinal surgical services and patients are being forced to travel long distances even for emergency care often at the risk of further deterioration of their condition. Given the complexity of, and increasingly effective surgical interventions for spinal conditions there is a need to create networks of care across the country both at a local and regional /geographical level to ensure an equitable, safe and effective service provision for this patient population.

APPENDIX 4

REVIEW OF SPINAL INFECTION BASED ON NICE QUALITY STANDARDS ENGAGEMENT EXERCISE FORMAT

Please note that because the NICE Exercise has finished we are including this submission within this report as a background to the report and will be submitting this to NICE proactively outside a formal consultation process.

Proposed submission for NICE topic - Clinical and Service guidelineleading to development of NICE Quality standard

Please enter the name of your registered stakeholder organisation below.	
Stakeholder Organisation:	National Spinal Taskforce (A group commissioned by Sir Bruce Keogh to advise on the commissioning of spinal services – Terms of Reference and membership attached) includes representation from The British Orthopaedic Association, The Society of British Neurological Surgeons, The British Association of Spine Surgeons, The British Scoliosis Society, The British Pain Society, British Society of Skeletal Radiologists, The Specialist Orthopaedic Alliance, The Chartered Society of Physiotherapy and The London Specialised Commissioning Group.
Name of commentator:	Alistair Stirling Consultant Spinal Surgeon Previous Lead Clinician NICE CG75 Metastatic Spinal Cord Compression Member National Spinal Taskforce 2010 and 2012

ORDER NUMBER *(For internal use only)*	**QUESTION NUMBER** *Please state the question number you are responding to or 'general' for other comments*	**COMMENTS** *Please insert each new comment in a new row. Please do not paste other tables into this table, as your comments could get lost – type directly into this table.*
1	General	We are of the view that the management of spinal infection should be formally addressed by NICE and that guidance would be of great benefit. Around 5000 FCE's relating to spinal infection were completed in 2011, the majority, 75%, being emergency admissions. Currently there are no national UK guidelines. (Please see appendix below). Of these 595 (12%) required significant surgical intervention with associated financial and social cost. As a missed diagnosis it has the highest overall medico-legal costs per case (Quraishi et al ESJ 2012 21:S196-199). Average damages for missed acute spinal infection were £433,296. A key point being that 60% of these were managed by nonsurgical specialities.

2	Background	Spinal infection is a rare but increasingly common condition which is important because diagnosis is often delayed and incorrectly managed it may: • Cause avoidable spinal deformity and/or paralysis (and rarely death) in those with an otherwise normal life expectancy. • Need multiple episodes of care including (potentially avoidable) surgical interventions particularly if antibiotics are started without appropriate microbiological diagnosis and spinal surgical consultation. The prognosis of appropriately managed spinal infection is favourable. Delays in treatment for this group of patients, some of whom are in the middle years of life, may lead to chronicity, unemployment, and social breakdown with obvious financial burdens for families and the State. Those with severe persistent symptoms continue to consume significant healthcare resources.
3	Background	• Pyogenic bacterial infection is usually spontaneous but may follow medical intervention at sites other than the spine. The incidence of this type of infection in healthy people remains very low. The incidence has however increased overall as it often occurs in those with compromised immunity. i.e. diabetics, those on steroids, immunosuppression for any cause, chemotherapy, dialysis, intravenous drug users and those with sickle cell disease. • Tuberculous spinal infection is more common in some immigrant communities and those living in close proximity with infected individuals. Increasingly multiply resistant strains are being seen causing problems with treatment. It is a great mimic and may easily be confused with other conditions. Biopsy for histology and bacteriological culture and definition of antibiotic sensitivity is important. • Less commonly pyogenic infection may occur after surgery on the spine itself. This is usually recognised and treated successfully after correct bacteriological diagnosis and appropriate antibiotics are given.

4	General	A range of professionals including general practitioners, emergency department medical staff, general physicians, rheumatologists, surgeons, physiotherapists, chiropractors, osteopaths and alternative therapists see patients with this condition but diagnosis is often delayed. There is no commonly agreed pathway for the investigation and subsequent treatment of spinal infection including: • General information and advice • Requirement for biopsy • Pharmacology (– in particular necessary prerequisites for starting antibiotics, route of administration and duration of antibiotics) • Other physical therapies • Other interventional therapies • Surgical intervention – including indications and type As a result there is considerable variation in the management of spinal infection both across and within regions. Patients who receive multiple treatments generate considerable cost. Moreover, the decisions that some groups take are driven by imperatives other than clinical evidence.
5	General	If spinal infection is recognised at an early stage (MRI is usually diagnostic) and appropriate image guided biopsy identifies the microbiological cause and sensitivities treatment without surgery is usually possible and successful. When diagnosis is delayed and inappropriate antibiotics are given surgery may be necessary and even with this adequate disease control is not always achieved resulting in multiple treatment episodes and prolonged courses of expensive antibiotics.
6	General	It is urgent that NICE guidance in the management of spinal infection is produced to support the current DH Spinal Taskforce recommendations that address service aspects (and in the absence of other guidance touch upon the clinical management of this condition).
7	General	
8	Organisation of services	The type and level of service provision is important to ensure that appropriate clinical decisions are made and the patient progresses along an established and effective pathway. This would help local populations to improve their service and the outcomes for patients. It is important to define whom, and with what level and type of training and competencies, should be responsible for clinical decisions and patients' progression.
9	Urgency for action	The number of patients presenting with spinal infection is increasing. The objective is to ensure early bacteriological diagnosis and appropriate treatment with spinal surgical advice to ensure that surgical requirement is minimised.

10	Networks	Networks are crucial to the proper provision of care for these patients. Many parts of the country no longer have local spinal surgical services and patients are being forced to travel long distances even for emergency care often at the risk of further deterioration of their condition. Given the complexity of, and increasingly effective surgical interventions for spinal conditions there is a need to create networks of care across the country both at a local and regional /geographical level to ensure an equitable, safe and effective service provision for this patient population.

Appendix A – Epidemiology based on HES statistics 2010-11

SPINAL INFECTION (POTENTIALLY SERIOUS PATHOLOGY)

i. Definition of patient group

For the purposes of this report, infection of the spine is identified through the diagnosis codes recorded for each patient (ICD10 Codes). A range of diagnosis codes can be used to indicate infection of the spine, these are: M462 Osteomyelitis of vertebra, M463 Infection of intervertebral disc (pyogenic), M464 Discitis, unspecified, M465 Other infective spondylopathies, M490 Tuberculosis of spine, M491 Brucella spondylitis, M492 Enterobacterial spondylitis, and M493 Spondylopathy in other infectious and parasitic diseases NEC. Patients with any of these diagnosis codes recorded, as either a primary or secondary diagnosis are included in this analysis.

ii. Patients with spinal infection – general overview

In total there were around 5,000 FCEs associated with patients with a diagnosis of infection of the spine. The majority of these cases were emergency admissions (75%). Where a surgical procedure was recorded the patients were mainly under the care of an orthopaedic consultant or neurosurgeon.

Table 28: Patients with spinal infection (Treatment Speciality and Admission Method)

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	453	39%	31%	30%	65%	21%	13%
Non-Specialist Surgery	97	43%	44%	12%	59%	26%	15%
Intradural Specialist Surgery	45	24%	22%	53%	80%	13%	7%
Pain & Neuro Modulation	3	0%	0%	100%	0%	67%	33%
Non-Specialist Non-Surgical procedures	111	41%	10%	49%	51%	49%	0%
Non-spinal procedure only	2734	16%	5%	79%	74%	17%	9%
No procedure recorded	1629	16%	4%	79%	81%	9%	11%

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

A high proportion of the FCEs had no procedure recorded. The highest numbers of these patients were under the care of a consultant registered in general medicine (37% of all FCEs with no procedure recorded). Overwhelmingly these were emergency admissions (81%), with an average length of stay of 12 days. There is some concern that a large number of patients with spinal infection are admitted under the care of other specialities. It is generally considered that inadequate treatment of spinal infection i.e. not finding the infecting organism through blood cultures or biopsy and too short a period of intravenous antibiotics can result in poor outcome and make surgery more likely. A length of stay of only 12 days seems short for these patients.

As is shown in the chart below, the most common diagnosis code found for patients with an infection of the spine related to Discitis (56%). Many patients had a combination of diagnosis codes indicating infection of the spine, the most combination of codes related to discitis and osteomyelitis (191 FCEs).

Table 29: Patients with spinal infection - Diagnosis codes used

Diagnosis code	Count
M464 Discitis, unspecified	2,821
M490 Tuberculosis of spine	750
M462 Osteomyelitis of vertebra	569
M463 Infection of intervertebral disc (pyogenic)	516
M465 Other infective spondylopathies	94
M492 Enterobacterial spondylitis	2
M491 Brucella spondylitis	0
M493 Spondylopathy in other infectious and parasitic diseases NEC	0
More than one spinal infection diagnosis	320
Total	5,072

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

iii. Patients with spinal infection – biopsies

There were 333 FCEs recorded where a biopsy had been undertaken in association with spinal infection, the majority were recorded as the main procedure (n=284). As is shown in the table below, the main procedure recorded was biopsy of a lesion of an intervertebral disc.

Table 30: Patients with spinal infection – biopsy procedures

Main procedure code	Count
V524 Biopsy of lesion of intervertebral disc nec	121
V473 Biopsy of lumbar vertebra	93
V472 Biopsy of thoracic vertebra	47
V478 Other specified biopsy of spine	11
V479 Unspecified biopsy of spine	7

V471 Biopsy of cervical vertebra	5
Total	284

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

Overall, 79 providers had biopsy FCEs recorded for patients with a spinal infection, where the admission was recorded as an emergency. The median length of stay for patients admitted as an emergency with a biopsy as the main procedure recorded was 22 days, however the median length of stay varied across provider.

iv. Patients with spinal infection – surgical interventions

Biopsies were the main procedure recorded for this group of patients. A range of other procedures were recorded, mainly in relation to extradural and non-specialist surgery. The table below illustrates the main procedures recorded (excluding biopsies). These procedures range from a washout/debridement, which would be classed as a non-specialised spinal procedure, to a complex anterior and posterior debridement with stabilisation and reconstruction, which is definitely a specialised procedure. Unfortunately with spinal infection, inappropriate early management can result in an increased likelihood of requiring a major surgical procedure. It is therefore suggested that all spinal infections be managed by Consultants familiar with appropriate early management to reduce this potential increased morbidity and mortality.

Table 31: Patients with spinal infection – surgical procedures

Diagnosis code	Count
A482 Aspiration of lesion of spinal cord	26
V242 Primary decompression of thoracic spinal cord nec	20
V254 Primary posterior laminectomy decompression of lumbar spinal cord	19
V411 Posterior attachment of correctional instrument to spine	16
V548 Other specified other operations on spine	15
V255 Primary posterior decompression of lumbar spinal cord nec	11
V241 Primary decompression of thoracic spinal cord and fusion of joint of thoracic spine	10
V381 Primary fusion of joint of thoracic spine	8
V408 Other specified stabilisation of spine	8
V331 Primary laminectomy excision of lumbar intervertebral disc	8
V294 Primary anterior excision of cervical intervertebral disc and interbody fusion of joint of cervical spine	7
V388 Other specified primary fusion of other joint of spine	7

V253 Primary posterior decompression of lumbar spinal cord and intertransverse fusion of joint of lumbar spine	7
Other procedures <7 n=80)	149
Total	311

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

Appendix B

SPINAL INFECTION – SUGGESTED MANAGEMENT

(Courtesy of Sheffield Orthopaedic Spinal Unit)

1. On admission
   a. FBC, U&E, ESR, CRP, LFTs, Blood cultures x 3 sets (10-14% contamination rate)
   b. X-ray
   c. MRI + contrast
2. Await blood culture results at 48 hours (50% positive rate, higher if taken during pyrexia). If positive, organism consistent with clinical picture and imaging showing discitis, treat with appropriate antibiotics (see table below)
3. If blood cultures negative at 48 hours, proceed to:
4. CT/II guided biopsy (abscess drainage preferred to disc biopsy) + insertion PICC line (US guided)
   a. Histology
   b. Microbiology in sterile saline – request AAFB if suspicious but reduces chance of +ve culture
5. Take 2 further sets of blood cultures within 4 hours of biopsy
6. Await results if patient well
7. If biopsy negative, repeat biopsy, also investigate for infection at other sites, e.g. urine, chest x-ray, abdominal ultrasound, serology for brucella and coxiella, Echocardiogram. (* need to examine benefit of repeat biopsy)
8. Commence empirical IV antibiotics – 1g flucloxacillin qds until biopsy result:
9. Antibiotics depend on:
   a. Biopsy
   b. Blood culture
   c. Past infection history
10. If no result from blood cultures, 2x biopsies or past infection history then discuss antibiotics with microbiology but if uncomplicated start IV flucloxacillin 1g qds + rifampicin/fusidin acid. Add a 3rd generation cephalosporin to add to streptococcal and gram-ve cover if concerned this may be needed.

a. Document response in 3-4 days
b. ESR, CRP
c. Clinical picture
d. If improving, continue, if not then discuss broad spectrum antibiotics with microbiology

11. In all cases decide whether IV antibiotics will continue by OPAT or whether conversion to oral antibiotics at 10-14 days. If converting to oral antibiotics, biochemical and clinical improvement must be documented. Consider:
    a. Adequate oral alternative with good bone penetration eg avoid tazocin
    b. Logistics of OPAT
12. Total antibiotics 3 months, typical course:
    a. 10-14 days IV
    b. ESR, CRP day of starting antibiotics (before) = day1, day4, day7
    c. Oral antibiotics and discharge
    d. Review 2 weeks – FBC, ESR, CRP
    e. Review 2 weeks – FBC, ESR, CRP, X-ray
    f. Review 4 weeks – FBC, ESR
    g. Review 4 weeks – FBC, ESR, CRP, X-ray
13. Rising inflammatory markers, deteriorating clinical picture
    a. X-ray
    b. Repeat MRI + contrast
    c. Contact microbiology
    d. Change to IV Vancomycin and IV Ceftriaxone
    e. Contact OPAT service – Dr Chapman (sec 68874) or OPAT nurses (12605)
    f. If suitable, for transfer to OPAT service on discharge
14. Development of neurological symptoms/signs
    a. Contact Spinal Consultant
    b. Repeat MRI
15. Spinal Infection MDT every 4 weeks RHH Tuesday 3.30pm
    a. Spinal Consultant
    b. Infectious Diseases Consultant
    c. Radiology Consultant
    d. Microbiology Consultant
16. Cases for MDT:
    a. Existing active cases from previous month
    b. New cases
        i. Spinal Consultants

ii. Radiology MRI reports

iii. Microbiology

Organism	First-line therapy (IV)	Alternative IV therapy	Oral maintenance
MSSA	fluclox	Clindamycin; ciprofloxacin + rifampicin	Same
MRSA	Teicoplanin + rifampicin / fusidic acid		Rifampicin + fusidic acid
Enterococcus	Amoxicillin + gentamicin	Teicoplanin + gentamicin	amoxycillin
Streptococcus sp	Amoxicillin	Clindamycin; ceftriaxone	Amoxicillin clindamycin
G-ve	Ceftriaxone + gentamicin / ciprofloxacin	Carbapenem + gentamycin / ciprofloxacin	ciprofloxacin
Anaerobes	clindamycin	Carbapenem; metronidazole	clindamycin

APPENDIX 5

INJECTION THERAPIES FOR LUMBAR SPINE CONDITIONS

GUIDANCE FOR COMMISSIONERS

Recently there has been considerable controversy concerning the effectiveness and cost effectiveness of injection therapies for lumbar spinal conditions. The purpose of this document is to provide clarification and advice for Commissioners in this field.

No treatment for lumbar spinal conditions should be provided in isolation. The patients should be managed on a structured care pathway with careful assessment and review of progress at each stage.

There are two groupings of pathologies that commonly affect the lumbar spine for which injections have been considered. These groups however, are very different in their response to injection therapy.

1. Patients with nerve root compression and/or inflammation. They typically present with predominantly leg pain or sciatica. Treatment is directed at the nerve root. These are referred to in this document as patients with **radicular pain**.

2. A very large group of patients with back pain but without nerve root involvement. This is often referred to **non-specific low back pain**, e.g. in the NICE Guidance,1 or as simple back pain.

Radicular Pain [50]

The two most common causes of radicular pain are prolapsed intervertebral disc and spinal stenosis. Patients should be managed on an explicit care pathway with explicit review and decision points. Injection therapy for radicular pain in a carefully selected patient is an appropriate procedure and suitable for commissioning.

INTER LAMINAR EPIDURAL INJECTION

Single shot epidural steroid is of short-term benefit in radicular pain from prolapsed disc and may enable normal activity to resume. Benefits and risks should be discussed with the patient. Surgical decompression is the alternative intervention. Epidural injections should be targeted at the affected nerve root(s) and performed under fluoroscopic guidance, or occasionally CT, in an appropriate setting 2.

TRANSFORAMINAL INJECTIONS (NERVE ROOT BLOCK)

Transforaminal injections are of moderate benefit in patients with radicular pain and improve functional ability. There are greater risks compared with inter laminar epidural injection. All transforaminal blocks must be performed under fluoroscopic guidance or occasionally CT.

Epidural injection by either approach may be of short-term benefit in radicular pain from spinal stenosis in selected cases where surgery is not desirable.

Injection therapies for chronic radiculopathy and claudication symptoms from spinal stenosis have a less well-defined evidence base. However, there is sufficient evidence to support the commissioning of injection therapy that is delivered as part of a structured care pathway.

Non-Specific Low Back Pain

The management of non-specific low back pain represents one of the greatest challenges in health care provision. Overall there is a lack of agreement on the source of the pain experienced. Some authorities will,

[50] Please refer back to Chapter on Radicular Pain.

for example, identify a subgroup of patients with pain thought to arise from the facet joints. Other authorities disagree that such subgroups are reliably identifiable.

It is essential that all patients with low back pain are managed from the outset according to a carefully constructed and evidence based care pathway. Risk assessments such as the STarT back tool may be of value to help stratify interventions. The pathway published in the NICE guidance for persisting low back pain between 6 weeks and one year1 is recommended. Detailed assessment and re-evaluation at the steps along the pathway, including psycho-social assessment, is essential.

The care pathway mandates that all patients being considered for injection therapy should have first completed an intensive Combined Physical and Psychological programme of approximately 100 contact hours as described in Appendix 3 of the DH guidance on quality and effective spinal services.3

NON-SPECIFIC LOW BACK PAIN UP TO 12 MONTHS DURATION

Injection therapies are not recommended for this group of patients.

NON-SPECIFIC LOW BACK PAIN OF GREATER THAN 12 MONTHS DURATION

Three injection therapies have been reviewed for consideration in this patient group:

1. Epidural Injection
   Epidural injection, either sacral or inter lamina, should not be commissioned in non-specific low back pain.

2. Facet Joint Injection
   Therapeutic facet joint injections should not be commissioned in non-specific low back pain. The American Pain Society,4 Guidelines published at the European Health Commission5 and the Cochrane Collaboration6 recommend against therapeutic facet joint injections in this patient group.

   Facet joint injections may have a role as a diagnostic procedure applicable in patients being considered for radio frequency denervation.

3. Radio Frequency Denervation
   Review by the American Pain Society and European Guidelines found no evidence to recommend this procedure as routine for patients with non-specific low back pain. However, some more recent support is available for its use in these affected patients. Commissioning could be considered on an individual exceptional circumstances basis.

References

1. NICE clinical guidelines CG88: Low back pain: early management of persistent nonspecific low back pain. May 2009 http://guidance.nice.org.uk/CG88
2. Royal College of Anaesthetists. Recommendations for good practice in the use of epidural injection for the management of pain of spinal origin in adults. 2011 http://www.rcoa.ac.uk/docs/epiduralinjections.pdf
3. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_114528
4. Chou et al, Interventional Therapies, Surgery, and Interdisciplinary Rehabilitation for Low Back Pain. An Evidence-Based Clinical Practice Guideline From the American Pain Society. SPINE 34:1066-1077, 2009.
5. Airaksinen et al, Chapter 4: European guidelines for the management of chronic nonspecific low back pain. Eur Spine J. 15 :S192-300, 2006.
6. Staal et al, Injection Therapy for Subacute and Chronic Low Back Pain. SPINE 34:49-59, 2009.

APPENDIX 6

DEFINITION OF NEEDS GROUPS

Non-specialist- Non surgical (NS- NS)

Non-specialist –Surgery (NS-S)

Specialised Surgery –Extra-Dural (SS-ED)

Specialised Surgery-Intra-Dural (SS-ID)

Pain and Neuro Modulation (P-NM).

Need group	Sub-group	Diagnosis codes (ICD10)	Procedure codes (OPCS)	Notes
Potentially serious pathology	Cauda Equina syndrome	All FCEs with a primary or secondary diagnosis of: • G83.4 Cauda Equina syndrome	Include all FCEs– both with and without spinal procedure codes.	
	Spinal tumours (including metastases)	All FCEs which fall into one of the following subgroups: a) Probable spinal metastases All FCEs with a primary or secondary diagnosis of: • Malignant neoplasm with a spinal surgical procedure (C00.0-C97.X, excluding diagnoses in parts b & c below) (see next column for procedure codes); • C79.5 Secondary malignant neoplasm of bone and bone marrow. b) Primary spinal tumours of osseoligamentous origin All FCEs with a primary or secondary diagnosis of: • C412 Malignant neoplasm of vertebral column; • D166 Benign neoplasm of vertebral column; • D480 Neoplasm uncert or unknown behaviour of bone & artic. cart. c) Primary spinal tumours of neurological origin All FCEs with a primary or secondary diagnosis of: • C701 Malignant neoplasm of spinal meninges; • C720 Malignant neoplasm of spinal cord; • C721 Malignant neoplasm of cauda equina; • D320 Benign neoplasm of cerebral meninges; • D321 Benign neoplasm of spinal meninges; • D329 Benign neoplasm of meninges; unspecified; • D334 Benign neoplasm of spinal cord; • D361 Benign neoplasm of periph nerves & autonomic nervous system; • D421 Neoplasm uncert / unkn behav spinal meninges; • D434 Neoplasm uncert / unkn behav spinal cord; • D437 Neoplasm uncert / unkn behav oth part of central nervous sys; • D439 Neoplasm uncert / unkn behav central nervous system, unsp. Exclude all cases with secondary diagnosis codes indicating cauda equina.	Only include FCEs- with procedure codes indicating spinal surgery (NS-S, SS-ED & SS-ID) – to ensure only FCEs relating to spinal tumours are included.	Non-surgical activity for this group will not be captured.

	Infection	All FCEs with a primary or secondary diagnosis of: • M462 Osteomyelitis of vertebra; • M463 Infection of intervertebral disc (pyogenic); • M464 Disciis, unspecified; • M465 Other infective spondylopathies; • M490 Tuberculosis of spine; • M491 Brucella spondylitis; • M492 Enterobacterial spondylitis; • M493 Spondylopathy in other infectious and parasitic dis EC. Exclude all cases with secondary diagnosis codes indicating cauda equina, or spinal tumours.	Include all FCEs– both with and without spinal procedure codes.	
Spinal deformity		All FCEs with a primary diagnosis of: • G710 Muscular dystrophy; • G809 Infantile cerebral palsy, unspecified; • M401 Other secondary kyphosis; • M402 Other and unspecified kyphosis; • M403 Flatback syndrome; • M404 Other lordosis; • M405 Lordosis, unspecified; • M410 Infantile idiopathic scoliosis; • M411 Juvenile idiopathic scoliosis; • M412 Other idiopathic scoliosis; • M413 Thoracogenic scoliosis; • M414 Neuromuscular scoliosis; • M415 Other secondary scoliosis; • M418 Other forms of scoliosis; • M419 Scoliosis, unspecified; • M420 Juvenile osteochondrosis of spine; • M438 Other specified deforming dorsopathies; • M439 Deforming dorsopathy, unspecified; • M45X Ankylosing spondylitis; • M928 Other specified juvenile osteochondrosis; • Q675 Congenital deformity of spine; • Q763 Congenital scoliosis due to congenital bony malformation; • Q850 Neurofibromatosis (nonmalignant); • Q874 Marfan's syndrome. Exclude all cases with secondary diagnosis codes indicating cauda equina, spinal tumours or infection.	Include all FCEs– both with and without spinal procedure codes.	Spinal levels of procedure need to be analysed for this group. Specific age groups to be used for this need group (0-10, 10-17, 18-49 and 50+).

Back pain / Radicular pain	All back pain (including neck pain) & all radicular pain (i.e. compression from disc and from 'arthritic change')	All FCEs with a primary diagnosis of: • G549 Nerve root and plexus disorder, unspecified; • G551 Nerve root and plexus compressions in intervertebral disc disorder; • G552 Nerve root and plexus compressions in spondylosis; • G952 Cord compression, unspecified; • M257 Osteophyte; • M430 Spondylolysis; • M431 Spondylolisthesis; • M471 Other spondylosis with myelopathy; • M472 Other spondylosis with radiculopathy; • M478 Other spondylosis; • M479 Spondylosis, unspecified; • M480 Spinal Stenosis; M501 Cervical disc disorder with radiculopathy; • M500 Cervical disc disorder with myelopathy; • M501 Cervical disc disorder with radiculopathy; • M502 Other cervical disc displacement; • M502 Other cervical disc displacement; • M503 Other cervical disc degeneration; • M503 Other cervical disc degeneration; • M508 Other cervical disc disorders; • M509 Cervical disc disorder, unspecified; • M510 Lumbar and other intravertebral disc disorders with mylopathy; • M511 Lumbar and other intervertbral disc disorders with radiculopathy; • M512 Other specified intervertebral disc displacement; • M513 Other specified intervertebral disc degeneration; • M514 Schmorl's nodes; • M518 Other specified intervertebral disc disorders; • M519 Intervertebral disc disorder, unspecified; • M532 Spinal instabilities; • M538 Other specified dorsopathies; M539 Dorsopathy, unspecified; • M541 Radiculopathy; • M542 Cervicalgia; • M543 Sciatica; M544 Lumbago with sciatica • M545 Low backpain; • M546 Pain in thoracic spine; • M548 Other dorsalgia; • M549 Dorsalgia, unspecified; • Q762 Congenital spondylolisthesis; • S134 Sprain and strain of cervical spine; • S233 Sprain and strain of thoracic spine;	Include all FCEs– both with and without spinal procedure codes.	

		• S335 Sprain and strain of lumbar spine; • S336 Sprain and strain of sacroiliac joint; • S337 Sprain and strain other and unspecified parts lumbar spine and pelvis. Exclude all cases with secondary diagnosis codes indicating cauda equina, spinal tumours or infection.		
Spinal trauma		All FCEs which fall into one of the following subgroups: a) Spinal cord injury All FCEs with a primary diagnosis of: • S140 Concussion and oedema of cervical spinal cord; • S141 Other and unspecified injuries of cervical spinal cord; • S240 Concussion and oedema of thoracic spinal cord; • S241 Other and unspecified injuries of thoracic spinal cord; • S340 Concussion and oedema of lumbar spinal cord; • S341 Other injury of lumbar spinal cord; • S343 Injury of Cauda Equina; • T093 Injury of spinal cord, level unspecified. OR FCEs with any of these codes as a secondary diagnosis with a primary diagnosis code of trauma (S00-T14) b) Vertebral column injury - with no evidence of osteoporosis All FCEs with a primary diagnosis of: • S120 Fracture of first cervical vertebra; • S121 Fracture of second cervical vertebra; • S122 Fracture of other specified cervical vertebra; • S127 Multiple fractures of cervical spine; • S128 Fracture of other parts of neck; • S129 Fracture of neck, part unspecified; • S130 Traumatic rupture of cervical intervertebral disc; • S131 Dislocation of cervical vertebra; • S132 Dislocation of other and unspecified parts of neck; • S133 Multiple dislocations of neck; • S220 Fracture of thoracic vertebra; • S221 Multiple fractures of thoracic spine; • S230 Traumatic rupture of thoracic intervertebral disc; • S231 Dislocation of thoracic vertebra; • S232 Dislocation of other and unspecified parts of thorax; • S320 Fracture of lumbar vertebra;	Include all FCEs– both with and without spinal procedure codes	There are several ways to code these conditions – need to try to include as many as possible whilst excluding patients who may have pre-existing injuries who are admitted for a different condition.

		• S321 Fracture of sacrum; • S322 Fracture of coccyx; • S330 Traumatic rupture of lumbar intervertebral disc; • S331 Dislocation of lumbar vertebra; • S332 Dislocation of sacroiliac and sacrococcygeal joint; • S344 Injury of lumbosacral plexus; • T021 Fractures involving thorax with lower back and pelvis. OR FCEs with any of these codes as a secondary diagnosis with a primary diagnosis code of trauma (S00-T14); AND absence of codes indicating osteoporosis (as set out below). c) Vertebral column injury with evidence of osteoporosis: All FCEs with codes for Vertebral column injury (as set out above) together with diagnosis codes indicating osteoporosis: • M80.0-M80.9 Osteoporosis with pathological fracture; • M810-M819 Osteoporosis without pathological fracture; • M484 Fatigue fracture of vertebra; • M485 Collapsed vertebra, not elsewhere classified. OR FCEs with these codes in combination as a secondary diagnosis with a primary diagnosis code of trauma (S00-T14); OR Primary diagnosis code is 'M80 osteoporosis with pathological fracture' and the site code indicates: 'head, neck, ribs, skull, trunk, vertebral column'. Exclude all cases with secondary diagnosis codes indicating cauda equina, spinal tumours or infection.		

Other notes

- Most diagnosis codes in HES only include 4 characters – so codes are given to the 4 character level only.
- Spinal procedure code groupings : P-NM = Pain and Neuro Modulation, SS-ID = Specialised Surgery – Intra Dural, SS-ED = Specialised Surgery – Extra Dural, NS-NS = Non-Specialist – Non-Surgical, NS-S = Non-Specialist – Surgical.
- FCEs will be allocated to a need group based on primary diagnosis, unless otherwise indicated above.
- FCEs will be allocated to a surgical group based on the first relevant procedure code recorded.
- All these groupings have been developed based on detailed analysis of HES data & ICD10 / OPCS codes. However, given the complexity of the conditions involved and the volume of codes available, further work should be undertaken to develop and enhance these groupings. Local commissioners will need to check and develop these groupings based on local data.

APPENDIX 7

FURTHER DETAIL POTENTIALLY SERIOUS PATHOLOGY

Further detail re tumours of osseo-ligamentous origin

"BENIGN" TUMOURS OF OSSEO-LIGAMENTOUS ORIGIN

Tumour Name	Behaviour	Special requirements	Surgical Technique	Adjuvant Treatment / monitoring
Osteochondroma	Latent Some active	Nil	Excision if symptomatic	No Short term monitoring
Haemangiomas	Latent Some active	Embolisation	Excision if symptomatic	No Short term monitoring
Osteoid Osteoma	Active		CT guided radiofrequency ablation or excision	No Short term monitoring
Eosinophilic Granuloma	Active		Rarely required	No Short term monitoring
Aneurysmal Bone cysts		Embolisation	Intralesional excision	No Short term monitoring
Osteoblastoma	Aggressive		Extralesional excision if possible	Not radiosensitive Long term monitoring.
Ostoclastoma Giant cell tumour	Aggressive	Embolisation	Extralesional excision if possible	Radiosensitive Long term monitoring

MALIGNANT TUMOURS OF OSSEO-LIGAMENTOUS ORIGIN

Tumour type	Behaviour	Special requirements	Surgical Treatment	Adjuvant Treatment
Chordoma	Slow to metastasise		En bloc excision	Proton therapy IMPT
Chondrosarcoma	Slow to metastasise		En bloc excision	Proton therapy IMPT

Osteosarcoma	May metastasise early	Neo adjuvant Chemotherapy	En bloc excision	IMRT
Ewings Sarcoma	May metastasise early	Neo adjuvant Chemotherapy	En bloc excision	IMRT

Further detail of coding for tumour surgery

CODING

These are the main codes used for intradural pathology – tumours

A442	Extirpation of lesion of spinal cord NEC
A443	Excision of lesion of intra-medullary spinal cord
A448	Other specified partial extirpation of spinal cord
A449	Unspecified partial extirpation of spinal cord
A481	Biopsy of lesion of spinal cord
A482	Aspiration of lesion of spinal cord
A511	Extirpation of lesion of meninges of spinal cord
A571	Extirpation of lesion of spinal nerve root

This represents about 720 procedures with these codes in the primary position.

Further detail re terminology relating to tumours

- Intra-dural refers to a tumour arising inside the lining of the spinal cord and nerves
- Intra-medullary refers to a tumour arising within the spinal cord itself
- Tumours are therefore defined as intra-dural, extra-medullary or intra-dural, intra-medullary.

Centres currently providing this surgical service should continue to do so, and it will always remain the preserve of neuro-surgically trained spinal surgeons within a neuroscience centre. The reasons for this are:

- It would be difficult to train adequately and maintain skills for procedures involving micro-neurosurgical dissection without a neuroscience centre.
- There is a requirement for neurological rehabilitation
- Cranial neurosurgery is a natural progression to the skill set required for the handling of neural tissue.

APPENDIX 8

SPINAL DEFORMITY

The Table contains the different requirements for surgery in Type I and Type II Paediatric spinal deformity surgery and Adult spinal deformity surgery.

Requirements	Type I: mainly late onset AIS	Type II: Complex deformity	Adult
Preoperative			
Specialist medical assessment	No	All	All
Comorbidities	No	Frequent	Usual
Operative			
Anaesthetic difficulties	Unusual	Frequent	Usual
Bone Quality	Excellent	Variable	Often poor
Technical:			
Instrumentation	Normal	Special range	Special range
Osteotomy/Vertebral column resection	No	Occasional osteotomy/ vertebral body resection	Often required
Transfusion requirement	Unusual with cell savers	Frequent	Frequent
Neurophysiology requirement	Sensory or combined	Sensory or combined	Sensory of combined
Post op care site			
MRI (24 hour, 7 day)	Rarely needed but essential	Rarely needed but essential	Rarely needed but essential
HDU	Y	Occasional	Often
PICU	N	Usual	Occasional
Ward Care	HDU/Routine	HDU/HIU/routine	HDU/Routine
Probable complications	Rare	Frequent	Often
Input from other specialists	Rare	Common	Often

APPENDIX 9

PROVIDERS OF SPINAL SURGERY IN ENGAND

NHS Trusts / Independent Providers with activity relating to lumbar decompression / discectomy – with 6+ FCEs (10-11 HES Data)

SHA	Trust name	Trust code
East Midlands	Derby Hospitals NHS Foundation Trust	RTG
	Kettering General Hospital NHS Foundation Trust	RNQ
	Northampton General Hospital NHS Trust	RNS
	Nottingham University Hospitals NHS Trust	RX1
	United Lincolnshire Hospitals NHS Trust	RWD
	University Hospitals Of Leicester NHS Trust	RWE
East of England	Basildon And Thurrock University Hospitals NHS Foundation Trust	RDD
	Cambridge University Hospitals NHS Foundation Trust	RGT
	Colchester Hospital University NHS Foundation Trust	RDE
	East And North Hertfordshire NHS Trust	RWH
	Fitzwilliam Hospital	NVC06
	Hinchingbrooke Health Care NHS Trust	RQQ-X
	Ipswich Hospital NHS Trust	RGQ
	James Paget University Hospitals NHS Foundation Trust	RGP
	Luton And Dunstable Hospital NHS Foundation Trust	RC9
	Mid Essex Hospital Services NHS Trust	RQ8
	Norfolk And Norwich University Hospitals NHS Foundation Trust	RM1
	Southend University Hospital NHS Foundation Trust	RAJ
	Spire Bushey Hospital	NT315
	Spire Norwich Hospital	NT318
	The Princess Alexandra Hospital NHS Trust	RQW
	The Queen Elizabeth Hospital, King's Lynn. NHS Foundation Trust	RCX
	West Hertfordshire Hospitals NHS Trust	RWG

London	Barking, Havering And Redbridge University Hospitals NHS Trust	RF4
	Barnet And Chase Farm Hospitals NHS Trust	RVL
	Barts And The London NHS Trust	RNJ
	BMI - The Blackheath Hospital	NT406
	BMI - The Clementine Churchill Hospital	NT411
	BMI - The Sloane Hospital	NT437
	Chelsea And Westminster Hospital NHS Foundation Trust	RQM
	Croydon Health Services NHS Trust	RJ6
	Ealing Hospital NHS Trust	RC3
	Epsom And St Helier University Hospitals NHS Trust	RVR-X
	Guy's And St Thomas' NHS Foundation Trust	RJ1-X
	Imperial College Healthcare NHS Trust	RYJ
	King's College Hospital NHS Foundation Trust	RJZ
	Lewisham Healthcare NHS Trust	RJ2
	Newham University Hospital NHS Trust	RNH
	North West London Hospitals NHS Trust	RV8
	Royal Free Hampstead NHS Trust	RAL
	Royal National Orthopaedic Hospital NHS Trust	RAN
	Spire Roding Hospital	NT314
	St George's Healthcare NHS Trust	RJ7
	The Hillingdon Hospitals NHS Foundation Trust	RAS
	The Whittington Hospital NHS Trust	RKE
	University College London Hospitals NHS Foundation Trust	RRV
	Whipps Cross University Hospital NHS Trust	RGC
North East	City Hospitals Sunderland NHS Foundation Trust	RLN
	Gateshead Health NHS Foundation Trust	RR7-X
	North Tees And Hartlepool NHS Foundation Trust	RVW
	Northumbria Healthcare NHS Foundation Trust	RTF
	South Tees Hospitals NHS Foundation Trust	RTR

	Spire Washington Hospital	NT333
	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	RTD
	Tyneside Surgical Services At The North East NHS Surgery Centre	NN401
North West	Abbey Gisburne Park Hospital	NTF01
	Aintree University Hospitals NHS Foundation Trust	REM
	Blackpool Teaching Hospitals NHS Foundation Trust	RXL
	BMI - The Alexandra Hospital	NT401
	BMI - The Highfield Hospital	NT420
	Central Manchester University Hospitals NHS Foundation Trust	RW3-X
	Countess Of Chester Hospital NHS Foundation Trust	RJR
	Fulwood Hall Hospital	NVC07
	Lancashire Teaching Hospitals NHS Foundation Trust	RXN
	Pennine Acute Hospitals NHS Trust	RW6
	Royal Liverpool And Broadgreen University Hospitals NHS Trust	RQ6
	Salford Royal NHS Foundation Trust	RM3
	Southport And Ormskirk Hospital NHS Trust	RVY
	Spire Cheshire Hospital	NT324
	Spire Fylde Coast Hospital	NT347
	Stockport NHS Foundation Trust	RWJ
	The Walton Centre NHS Foundation Trust	RET
	Trafford Healthcare NHS Trust	RM4
	University Hospitals Of Morecambe Bay NHS Foundation Trust	RTX
	Warrington And Halton Hospitals NHS Foundation Trust	RWW
South Central	BMI - Sarum Road Hospital	NT433
	BMI - The Foscote Hospital	NT415
	BMI - The Hampshire Clinic	NT418
	BMI - The Princess Margaret Hospital	NT428
	Buckinghamshire Healthcare NHS Trust	RXQ
	Hampshire Hospitals NHS Foundation Trust	RN5-X

	Heatherwood And Wexham Park Hospitals NHS Foundation Trust	RD7
	Milton Keynes Hospital NHS Foundation Trust	RD8
	Nuffield Orthopaedic Centre NHS Trust	RBF-X
	Oxford University Hospitals NHS Trust	RTH
	Portsmouth Hospitals NHS Trust	RHU
	Royal Berkshire NHS Foundation Trust	RHW
	Spire Clare Park Hospital	NT345
	Spire Southampton Hospital	NT304
	University Hospital Southampton NHS Foundation Trust	RHM
	BMI The Chiltern	NT410
	BMI The Shelburne Hospitals	NT435
South East Coast	Ashford And St Peter's Hospitals NHS Foundation Trust	RTK
	Ashtead Hospital	NVC01
	BMI - Goring Hall Hospital	NT417
	Brighton And Sussex University Hospitals NHS Trust	RXH
	Dartford And Gravesham NHS Trust	RN7-X
	East Kent Hospitals University NHS Foundation Trust	RVV
	East Sussex Healthcare NHS Trust	RXC
	Frimley Park Hospital NHS Foundation Trust	RDU
	Maidstone And Tunbridge Wells NHS Trust	RWF
	Medway NHS Foundation Trust	RPA
	North Downs Hospital	NVC11
	Royal Surrey County Hospital NHS Foundation Trust	RA2
	Spire Alexandra Hospital	NT312
	Surrey And Sussex Healthcare NHS Trust	RTP
	Sussex Orthopaedic NHS Treatment Centre	NTP17
	The Horder Centre - St Johns Road	NXM01
	The Spencer Wing	NTYF1
	Western Sussex Hospitals NHS Trust	RYR-X

South West	BMI - Bath Clinic	NT402
	BMI - The Ridgeway Hospital	NT430
	Dorset County Hospital NHS Foundation Trust	RBD
	Gloucestershire Hospitals NHS Foundation Trust	RTE
	Great Western Hospitals NHS Foundation Trust	RN3
	New Hall Hospital	NVC09
	North Bristol NHS Trust	RVJ-X
	Northern Devon Healthcare NHS Trust	RBZ
	Nuffield Health, Exeter Hospital	NT215
	Nuffield Health, Plymouth Hospital	NT233
	Plymouth Hospitals NHS Trust	RK9
	Royal Devon And Exeter NHS Foundation Trust	RH8
	Royal United Hospital Bath NHS Trust	RD1
	Salisbury NHS Foundation Trust	RNZ
	Taunton And Somerset NHS Foundation Trust	RBA
	Winfield Hospital	NVC22
West Midlands	Birmingham Children's Hospital NHS Foundation Trust	RQ3
	BMI - The Meriden Hospital	NT424
	BMI - The Priory Hospital	NT429
	Shrewsbury And Telford Hospital NHS Trust	RXW
	The Dudley Group Of Hospitals NHS Foundation Trust	RNA
	The Midlands NHS Treatment Centre	NTA03
	The Robert Jones And Agnes Hunt Orthopaedic Hospital NHS Foundation Trust	RL1
	The Royal Orthopaedic Hospital NHS Foundation Trust	RRJ
	The Royal Wolverhampton Hospitals NHS Trust	RL4
	University Hospital Of North Staffordshire NHS Trust	RJE
	University Hospitals Birmingham NHS Foundation Trust	RRK-X
	University Hospitals Coventry And Warwickshire NHS Trust	RKB
	Walsall Healthcare NHS Trust	RBK

	West Midlands Hospital	NVC21
	Wye Valley NHS Trust	RLQ
Yorkshire and the Humber	Airedale NHS Foundation Trust	RCF
	Barnsley Hospital NHS Foundation Trust	RFF
	BMI The Duchy Hospital	NT447
	Calderdale And Huddersfield NHS Foundation Trust	RWY
	Claremont Hospital	NTE03
	Doncaster And Bassetlaw Hospitals NHS Foundation Trust	RP5
	Hull And East Yorkshire Hospitals NHS Trust	RWA
	Leeds Teaching Hospitals NHS Trust	RR8
	Mid Yorkshire Hospitals NHS Trust	RXF-X
	Scarborough And North East Yorkshire Health Care NHS Trust	RCC
	Sheffield Teaching Hospitals NHS Foundation Trust	RHQ
	Spire Elland Hospital	NT348
	Spire Methley Park Hospital	NT350
	The Rotherham NHS Foundation Trust	RFR
	York Teaching Hospital NHS Foundation Trust	RCB

There are 51 Hospitals <6 FCEs (Note: Procedure codes = A578,A579,v252,v254,v255,v256,v258,v259,v278,v331,v332,v337,v338,v339, v351,v493,v528,v671,v672, All age groups, NHS patients only

APPENDIX 10

SHA CLUSTER PROFILES

ACTIVITY PROFILE – NON-SPECIALIST SURGERY CATEGORY (NS-S)

			NORTH EAST	NORTH WEST	YORKSHIRE AND THE HUMBER	EAST MIDLANDS	WEST MIDLANDS	EAST OF ENGLAND	LONDON	SOUTH EAST COAST	SOUTH CENTRAL	SOUTH WEST	#N/A	Grand Total
			Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39		
		Population	2577541	6923826	5244957	4380276	5421595	5714218	7757619	4302299	4069352	5181449		51573132.45
		Total Episodes	1909	3817	2632	2258	2645	2576	2759	2502	2101	3218	535	26952
		Rate per 10,000 population	7	6	5	5	5	5	4	6	5	6		5
		Episodes												
		Org Name	NORTH EAST	NORTH WEST	YORKSHIRE AND THE HUMBER	EAST MIDLANDS	WEST MIDLANDS	EAST OF ENGLAND	LONDON	SOUTH EAST COAST	SOUTH CENTRAL	SOUTH WEST	#N/A	Grand Total
Q30	RTD	THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	855	107	*	*	*	*	*	*	*	*	*	969
	RTR	SOUTH TEES HOSPITALS NHS FOUNDATION TRUST	420	*	166	*	*	*	*	*	*	*	*	599
	RVW	NORTH TEES AND HARTLEPOOL NHS FOUNDATION TRUST	210	9	30	*	*	*	*	*	*	*	*	252
	NT333	SPIRE HEALTHCARE	158	*	*	*	*	*	*	*	*	*	*	161
	RLN	CITY HOSPITALS SUNDERLAND NHS FOUNDATION TRUST	126	*	*	*	*	*	*	*	*	*	*	128
	RTF	NORTHUMBRIA HEALTHCARE NHS FOUNDATION TRUST	100	*	*	*	*	*	*	*	*	*	*	105
		Other	37	*	*	*	*	*	*	*	*	*	78	115
Q31	RM3	SALFORD ROYAL NHS FOUNDATION TRUST	*	1061	8	28	*	*	*	*	*	*	*	1106
	RET	THE WALTON CENTRE NHS FOUNDATION TRUST	*	702	*	*	*	*	*	*	*	*	132	836

	RXN	LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	*	742	8	*	*	*	*	*	*	*	*	757
	RWJ	STOCKPORT NHS FOUNDATION TRUST	*	186	*	31	*	*	*	*	*	*	*	220
	NTF01	ABBEY HOSPITALS	*	151	8	*	*	*	*	*	*	*	*	161
	REM	AINTREE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	144	*	*	*	*	*	*	*	*	*	145
	RWW	WARRINGTON AND HALTON HOSPITALS NHS FOUNDATION TRUST	*	127	*	*	*	*	*	*	*	*	*	132
	RQ6	ROYAL LIVERPOOL AND BROADGREEN UNIVERSITY HOSPITALS NHS TRUST	*	109	*	*	*	*	*	*	*	*	*	111
	RJR	COUNTESS OF CHESTER HOSPITAL NHS FOUNDATION TRUST	*	74	*	*	*	*	*	*	*	*	34	109
	NT347	SPIRE HEALTHCARE	*	103	*	*	*	*	*	*	*	*	*	105
		Other	*	226	11	*	*	*	*	*	*	*	*	242
Q32	RHQ	SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	*	*	418	160	*	*	*	*	*	*	*	583
	RWA	HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	*	*	531	17	*	*	*	*	*	*	*	549
	RR8	LEEDS TEACHING HOSPITALS NHS TRUST	*	*	528	*	*	*	*	*	*	*	*	532
	RXF-X	MID YORKSHIRE HOSPITALS NHS TRUST	*	*	287	*	*	*	*	*	*	*	*	287
	NTE03	CLAREMONT & ST HUGH'S HOSPITALS (HMT)	*	*	161	88	*	*	*	*	*	*	*	253
	RP5	DONCASTER AND BASSETLAW HOSPITALS NHS FOUNDATION TRUST	*	*	152	55	*	*	*	*	*	*	*	208
		Other	*	*	305	8	*	*	*	*	*	*	*	316
Q33	RX1	NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST	*	*	*	590	10	8	*	*	*	*	*	614
	RTG	DERBY HOSPITALS NHS FOUNDATION TRUST	*	*	*	370	116	*	*	*	*	*	*	489
	RWD	UNITED LINCOLNSHIRE HOSPITALS NHS TRUST	*	*	*	181	*	*	*	*	*	*	*	187
	RWE	UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	*	*	*	181	*	*	*	*	*	*	*	182
	RNS	NORTHAMPTON GENERAL HOSPITAL NHS TRUST	*	*	*	122	*	*	*	*	10	*	*	137

	RNQ	KETTERING GENERAL HOSPITAL NHS FOUNDATION TRUST	*	*	*	122	*	*	*	*	*	*	*	124
		Other	*	*	*	25	*	*	*	*	*	*	*	25
Q34	RKB	UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	*	*	*	51	638	*	*	*	*	7	*	700
	RRK-X	UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	*	*	*	*	615	*	*	*	*	*	*	632
	RRJ	THE ROYAL ORTHOPAEDIC HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	449	*	*	*	*	*	*	457
	RL1	ROBERT JONES AND AGNES HUNT ORTHOPAEDIC AND DISTRICT HOSPITAL NHS TRUST	*	20	*	*	172	*	*	*	*	*	163	358
	RJE	UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	*	23	*	*	205	*	*	*	*	*	*	231
		Other	*	*	*	10	352	*	*	*	*	*	*	370
Q35	RGT	CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	21	*	461	*	*	*	*	*	487
	RM1	NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	266	*	*	*	*	*	267
	RGQ	IPSWICH HOSPITAL NHS TRUST	*	*	*	*	*	227	*	*	*	*	*	229
	RWG	WEST HERTFORDSHIRE HOSPITALS NHS TRUST	*	*	*	*	*	167	*	*	*	*	*	175
	NVC06	FITZWILLIAM HOSPITAL	*	*	*	86	*	61	*	*	*	*	*	147
	RAJ	SOUTHEND UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	141	*	*	*	*	*	142
	RCX	THE QUEEN ELIZABETH HOSPITAL, KING'S LYNN. NHS FOUNDATION TRUST	*	*	*	10	*	102	*	*	*	*	*	112
	RQW	THE PRINCESS ALEXANDRA HOSPITAL NHS TRUST	*	*	*	*	*	103	*	*	*	*	*	105
	RDE	COLCHESTER HOSPITAL UNIVERSITY NHS FOUNDATION TRUST	*	*	*	*	*	100	*	*	*	*	*	100
		Other	*	*	*	7	*	433	10	*	9	*	*	462
Q36	RJZ	KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	235	197	*	*	*	438
	RYJ	IMPERIAL COLLEGE HEALTHCARE NHS TRUST	*	*	*	*	*	9	322	40	36	*	*	413

	RJ7	ST GEORGE'S HEALTHCARE NHS TRUST	*	*	*	*	*	*	289	98	11	*	7	411
	RRV	UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	37	293	33	12	*	*	383
	RF4	BARKING, HAVERING AND REDBRIDGE UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	91	151	*	*	*	*	245
	RNJ	BARTS AND THE LONDON NHS TRUST	*	*	*	*	*	39	174	14	*	*	*	231
	RAL	ROYAL FREE HAMPSTEAD NHS TRUST	*	*	*	*	*	59	155	*	*	*	*	220
	RJ1-X	GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	*	*	*	*	*	*	143	37	*	*	18	209
	RGC	WHIPPS CROSS UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	29	146	*	*	*	*	177
	RVR-X	EPSOM AND ST HELIER UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	114	51	*	*	*	165
	RVL	BARNET AND CHASE FARM HOSPITALS NHS TRUST	*	*	*	*	*	32	113	*	*	*	*	146
	RAS	THE HILLINGDON HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	9	106	*	7	*	*	128
	RAN	ROYAL NATIONAL ORTHOPAEDIC HOSPITAL NHS TRUST	*	*	*	*	*	44	62	8	7	*	*	127
	RJ6	CROYDON HEALTH SERVICES NHS TRUST	*	*	*	*	*	*	111	12	*	*	*	124
		Other	*	*	*	*	*	68	286	30	*	*	*	390
Q37	RXC	EAST SUSSEX HOSPITALS NHS TRUST	*	*	*	*	*	*	*	497	*	*	*	501
	RDU	FRIMLEY PARK HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	11	7	126	172	*	*	328
	RXH	BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	*	244	*	*	*	250
	RVV	EAST KENT HOSPITALS UNIVERSITY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	203	*	*	*	204
	NTP17	SUSSEX ORTHOPAEDIC NHS TREATMENT CENTRE	*	*	*	*	*	*	*	170	*	*	*	171
	RTK	ASHFORD AND ST PETER'S HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	105	*	*	*	114
	RA2	ROYAL SURREY COUNTY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	97	13	*	*	110
	NVC01	ASHTEAD HOSPITAL	*	*	*	*	*	*	*	101	*	*	*	105
		Other	*	*	*	*	*	*	*	394	9	*	*	410

Q38	RHM	SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	*	17	306	56	*	383
	RHW	ROYAL BERKSHIRE NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	317	*	*	320
	RBF-X	NUFFIELD ORTHOPAEDIC CENTRE NHS TRUST	*	*	*	19	7	*	*	*	262	16	*	306
	RTH	OXFORD RADCLIFFE HOSPITALS NHS TRUST	*	*	*	41	10	13	*	*	182	18	*	269
	RXQ	BUCKINGHAMSHIRE HEALTHCARE NHS TRUST	*	*	*	*	*	31	*	*	167	*	*	206
	RHU	PORTSMOUTH HOSPITALS NHS TRUST	*	*	*	*	*	*	*	*	176	*	*	179
	RD7	HEATHERWOOD AND WEXHAM PARK HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	101	*	*	105
		Other	*	*	*	*	*	10	*	*	198	48	*	271
Q39	RVJ-X	NORTH BRISTOL NHS TRUST	*	*	*	*	10	*	*	*	*	684	*	706
	RK9	PLYMOUTH HOSPITALS NHS TRUST	*	*	*	*	*	*	*	*	*	659	*	660
	RBD	DORSET COUNTY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	7	308	*	316
	RH8	ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	247	12	261
	RTE	GLOUCESTERSHIRE HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	25	*	*	*	*	214	*	244
	RBA	TAUNTON AND SOMERSET NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	225	*	229
	RNZ	SALISBURY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	31	172	*	205
	RN3	GREAT WESTERN HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	11	183	*	194
	RD1	ROYAL UNITED HOSPITAL BATH NHS TRUST	*	*	*	*	*	*	*	*	*	104	*	105
		Other	*	*	*	*	7	*	*	*	24	249	*	280
Grand Total			1909	3817	2632	2258	2645	2576	2759	2502	2101	3218	535	26952

ACTIVITY PROFILE – NON-SPECIALIST NON-SURGICAL CATEGORY (NS-NS)

		NORTH EAST	NORTH WEST	YORKSHIRE AND THE HUMBER	EAST MIDLANDS	WEST MIDLANDS	EAST OF ENGLAND	LONDON	SOUTH EAST COAST	SOUTH CENTRAL	SOUTH WEST	#N/A	Grand Total
	Population	2577541	6923826	5244957	4380276	5421595	5714218	7757619	4302299	4069352	5181449		51573132.45
	Total Episodes	7955	26946	16324	17464	18055	19495	22747	17592	12119	16788	951	176436
	Rate per 10,000 population	31	39	31	40	33	34	29	41	30	32		34
	Episodes												
	Org Name	NORTH EAST	NORTH WEST	YORKSHIRE AND THE HUMBER	EAST MIDLANDS	WEST MIDLANDS	EAST OF ENGLAND	LONDON	SOUTH EAST COAST	SOUTH CENTRAL	SOUTH WEST	#N/A	Grand Total
Q30	THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	2359	158	*	*	*	*	*	*	*	*	22	2546
	NORTH TEES AND HARTLEPOOL NHS FOUNDATION TRUST	2044	20	154	*	*	*	*	*	*	*	*	2228
	SOUTH TEES HOSPITALS NHS FOUNDATION TRUST	988	10	264	*	*	*	*	*	*	*	*	1270
	COUNTY DURHAM AND DARLINGTON NHS FOUNDATION TRUST	861	*	*	*	*	*	*	*	*	*	*	868
	NORTHUMBRIA HEALTHCARE NHS FOUNDATION TRUST	774	15	*	*	*	*	*	*	*	*	*	789
	CITY HOSPITALS SUNDERLAND NHS FOUNDATION TRUST	651	*	*	*	*	*	*	*	*	*	*	652
	SPIRE HEALTHCARE	101	*	*	*	*	*	*	*	*	*	*	106
	Other	165	*	*	*	*	*	*	*	*	*	64	231
Q31	PENNINE ACUTE HOSPITALS NHS TRUST	*	4983	21	*	*	*	*	*	*	*	*	5012
	SALFORD ROYAL NHS FOUNDATION TRUST	*	2450	13	19	*	*	*	*	*	*	7	2490
	LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	*	2248	8	*	*	*	*	*	*	*	*	2264
	WARRINGTON AND HALTON HOSPITALS NHS FOUNDATION TRUST	*	1918	*	*	*	*	*	*	*	*	*	1930
	SOUTHPORT AND ORMSKIRK HOSPITAL NHS TRUST	*	1560	*	*	*	*	*	*	*	*	*	1560

	UNIVERSITY HOSPITAL OF SOUTH MANCHESTER NHS FOUNDATION TRUST	*	1335	*	10	*	*	*	*	*	*	*	1350
	UNIVERSITY HOSPITALS OF MORECAMBE BAY NHS FOUNDATION TRUST	*	1312	22	*	*	*	*	*	*	*	*	1338
	WRIGHTINGTON, WIGAN AND LEIGH NHS FOUNDATION TRUST	*	1062	*	*	*	*	*	*	*	*	*	1065
	STOCKPORT NHS FOUNDATION TRUST	*	824	*	124	10	*	*	*	*	*	*	960
	EAST LANCASHIRE HOSPITALS NHS TRUST	*	943	*	*	*	*	*	*	*	*	*	948
	TRAFFORD HEALTHCARE NHS TRUST	*	864	7	*	*	*	*	*	*	*	*	871
	THE WALTON CENTRE NHS FOUNDATION TRUST	*	707	*	*	*	*	*	*	*	*	39	747
	BMI HEADQUARTERS	*	684	*	*	*	*	*	*	*	*	*	684
	WIRRAL UNIVERSITY TEACHING HOSPITAL NHS FOUNDATION TRUST	*	669	*	*	*	*	*	*	*	*	*	675
	COUNTESS OF CHESTER HOSPITAL NHS FOUNDATION TRUST	*	508	*	*	*	*	*	*	*	*	129	639
	BLACKPOOL TEACHING HOSPITALS NHS FOUNDATION TRUST	*	623	*	*	*	*	*	*	*	*	*	624
	TAMESIDE HOSPITAL NHS FOUNDATION TRUST	*	548	*	56	*	*	*	*	*	*	*	605
	MID CHESHIRE HOSPITALS NHS FOUNDATION TRUST	*	555	*	*	22	*	*	*	*	*	*	582
	NORTH CUMBRIA UNIVERSITY HOSPITALS NHS TRUST	*	548	*	*	*	*	*	*	*	*	9	559
	ROYAL BOLTON HOSPITAL NHS FOUNDATION TRUST	*	449	*	*	*	*	*	*	*	*	*	451
	AINTREE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	407	*	*	*	*	*	*	*	*	*	408
	BMI HEADQUARTERS	*	379	*	*	*	*	*	*	*	*	*	379
	ROYAL LIVERPOOL AND BROADGREEN UNIVERSITY HOSPITALS NHS TRUST	*	361	*	*	*	*	*	*	*	*	9	370
	THE CHRISTIE NHS FOUNDATION TRUST	*	107	*	7	*	*	*	*	*	*	*	118
	Other	*	391	8	*	7	*	*	*	*	*	*	415
Q32	DONCASTER AND BASSETLAW HOSPITALS NHS FOUNDATION TRUST	*	*	2280	815	*	*	*	*	*	*	*	3101

	CALDERDALE AND HUDDERSFIELD NHS FOUNDATION TRUST	*	*	1834	*	*	*	*	*	*	*	*	1841
	LEEDS TEACHING HOSPITALS NHS TRUST	*	8	1726	*	*	*	*	*	*	*	*	1742
	MID YORKSHIRE HOSPITALS NHS TRUST	*	*	1551	*	*	*	*	*	*	*	*	1553
	BRADFORD TEACHING HOSPITALS NHS FOUNDATION TRUST	*	56	1366	*	*	*	*	*	*	*	*	1430
	SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	*	*	1129	159	*	*	*	*	*	*	*	1292
	SCARBOROUGH AND NORTH EAST YORKSHIRE HEALTH CARE NHS TRUST	*	*	1278	*	*	*	*	*	*	*	*	1282
	THE YORKSHIRE CLINIC	*	33	1149	*	*	*	*	*	*	*	*	1182
	HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	*	*	903	9	*	*	*	*	*	*	*	912
	NORTHERN LINCOLNSHIRE AND GOOLE HOSPITALS NHS FOUNDATION TRUST	*	*	571	51	*	*	*	*	*	*	*	622
	YORK TEACHING HOSPITAL NHS FOUNDATION TRUST	*	*	503	*	*	*	*	*	*	*	*	503
	THE ROTHERHAM NHS FOUNDATION TRUST	*	*	378	7	*	*	*	*	*	*	*	385
	SPIRE HEALTHCARE	*	*	291	*	*	*	*	*	*	*	*	295
	AIREDALE NHS FOUNDATION TRUST	*	25	229	*	*	*	*	*	*	*	*	254
	CLAREMONT & ST HUGH'S HOSPITALS (HMT)	*	*	132	74	*	*	*	*	*	*	*	212
	SPIRE HEALTHCARE	*	*	123	*	*	*	*	*	*	*	*	123
	Other	*	*	175	*	*	*	*	*	*	*	*	178
Q33	NOTTINGHAM NHS TREATMENT CENTRE(NATIONS HEALTHCARE)	*	*	41	2539	*	*	*	*	*	*	11	2596
	UNITED LINCOLNSHIRE HOSPITALS NHS TRUST	*	*	33	2364	*	19	*	*	*	*	*	2417
	NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST	*	*	18	2349	7	25	*	*	*	*	*	2404
	SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST	*	*	*	1424	*	*	*	*	*	*	*	1427
	UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	*	*	*	1384	*	*	*	*	*	*	*	1399
	NORTHAMPTON GENERAL HOSPITAL NHS TRUST	*	*	*	1285	*	10	*	*	36	*	*	1336

	CHESTERFIELD ROYAL HOSPITAL NHS FOUNDATION TRUST	*	*	24	1234	*	*	*	*	*	*	*	1263
	DERBY HOSPITALS NHS FOUNDATION TRUST	*	*	*	998	140	*	*	*	*	*	*	1143
	KETTERING GENERAL HOSPITAL NHS FOUNDATION TRUST	*	*	*	709	*	8	*	*	*	*	*	717
	Other	*	*	*	120	*	*	*	*	*	*	*	121
Q34	THE DUDLEY GROUP OF HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	2183	*	*	*	*	*	*	2184
	UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	*	*	*	160	1823	*	*	*	7	*	*	1996
	THE ROYAL ORTHOPAEDIC HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	1965	*	*	*	*	*	12	1982
	BIRMINGHAM TREATMENT CENTRE	*	*	*	*	1345	*	*	*	*	*	*	1349
	MID STAFFORDSHIRE NHS FOUNDATION TRUST	*	*	*	*	1093	*	*	*	*	*	*	1094
	UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	*	69	*	*	869	*	*	*	*	*	*	945
	THE ROYAL WOLVERHAMPTON HOSPITALS NHS TRUST	*	*	*	*	934	*	*	*	*	*	*	934
	UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	*	*	*	*	872	*	*	*	*	*	*	880
	WALSALL HEALTHCARE NHS TRUST	*	*	*	*	872	*	*	*	*	*	*	878
	WORCESTERSHIRE ACUTE HOSPITALS NHS TRUST	*	*	*	*	853	*	*	*	*	*	*	858
	HEART OF ENGLAND NHS FOUNDATION TRUST	*	*	*	*	786	*	*	*	*	*	*	790
	THE MIDLANDS NHS TREATMENT CENTRE	*	*	*	216	538	*	*	*	*	*	*	756
	ROBERT JONES AND AGNES HUNT ORTHOPAEDIC AND DISTRICT HOSPITAL NHS TRUST	*	36	*	*	420	*	*	*	*	*	286	744
	SHREWSBURY AND TELFORD HOSPITAL NHS TRUST	*	*	*	*	559	*	*	*	*	*	33	595
	WORCESTERSHIRE PCT	*	*	*	*	554	*	*	*	*	16	*	572
	GEORGE ELIOT HOSPITAL NHS TRUST	*	*	*	35	384	*	*	*	*	*	*	420
	SOUTH WARWICKSHIRE NHS FOUNDATION TRUST	*	*	*	*	388	*	*	*	*	*	*	400
	WYE VALLEY NHS TRUST	*	*	*	*	258	*	*	*	*	11	47	317

	STOKE ON TRENT PCT	*	*	*	*	262	*	*	*	*	*	*	270
	BMI HEADQUARTERS	*	*	*	26	167	*	*	*	*	*	*	194
	CANNOCK CHASE TREATMENT CENTRE	*	*	*	*	118	*	*	*	*	*	*	118
	SPIRE HEALTHCARE	*	*	*	*	112	*	*	*	*	*	*	114
	Other	*	*	*	*	204	*	*	*	*	*	*	213
Q35	WEST HERTFORDSHIRE HOSPITALS NHS TRUST	*	*	*	*	*	1707	47	*	23	*	*	1779
	MID ESSEX HOSPITAL SERVICES NHS TRUST	*	*	*	*	*	1675	14	*	*	*	*	1689
	NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	1613	*	*	*	*	*	1615
	PETERBOROUGH AND STAMFORD HOSPITALS NHS FOUNDATION TRUST	*	*	*	586	*	996	*	*	*	*	*	1588
	IPSWICH HOSPITAL NHS TRUST	*	*	*	*	*	1548	*	*	*	*	*	1554
	EAST AND NORTH HERTFORDSHIRE NHS TRUST	*	*	*	*	*	1434	*	*	*	*	*	1447
	BASILDON AND THURROCK UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	1154	49	9	*	*	*	1213
	SOUTHEND UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	1149	*	*	*	*	*	1153
	CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	8	*	1106	*	*	*	*	*	1123
	COLCHESTER HOSPITAL UNIVERSITY NHS FOUNDATION TRUST	*	*	*	*	*	932	*	*	*	*	*	937
	THE PRINCESS ALEXANDRA HOSPITAL NHS TRUST	*	*	*	*	*	791	15	*	*	*	*	809
	WEST SUFFOLK HOSPITALS NHS TRUST	*	*	*	*	*	567	*	*	*	*	*	575
	THE QUEEN ELIZABETH HOSPITAL, KING'S LYNN. NHS FOUNDATION TRUST	*	*	*	45	*	513	*	*	*	*	*	558
	FITZWILLIAM HOSPITAL	*	*	*	362	*	191	*	*	*	*	*	554
	JAMES PAGET UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	347	*	*	*	*	*	349
	LUTON AND DUNSTABLE HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	317	*	*	18	*	*	335
	HINCHINGBROOKE HEALTH CARE NHS TRUST	*	*	*	11	*	249	*	*	*	*	*	260
	RIVERS HOSPITAL	*	*	*	*	*	190	*	*	*	*	*	191
	SPRINGFIELD HOSPITAL	*	*	*	*	*	162	*	*	*	*	*	166
	Other	*	*	*	*	*	165	32	*	9	*	*	207

Q36	BARNET AND CHASE FARM HOSPITALS NHS TRUST	*	*	*	*	*	502	1744	*	*	*	10	2268
	IMPERIAL COLLEGE HEALTHCARE NHS TRUST	*	*	*	*	*	33	2105	50	33	*	7	2236
	BARTS AND THE LONDON NHS TRUST	*	*	*	*	*	138	1838	53	*	*	*	2047
	SOUTH LONDON HEALTHCARE NHS TRUST	*	*	*	*	*	*	1786	215	*	*	*	2005
	BARKING, HAVERING AND REDBRIDGE UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	226	1720	*	*	*	*	1952
	UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	*	24	32	43	35	257	1176	201	78	46	40	1934
	THE HILLINGDON HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	104	1509	25	68	*	*	1708
	EPSOM AND ST HELIER UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	951	646	*	*	*	1603
	WHIPPS CROSS UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	150	1325	*	*	*	*	1482
	GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	*	*	*	7	*	46	1146	213	17	13	24	1471
	ROYAL NATIONAL ORTHOPAEDIC HOSPITAL NHS TRUST	*	*	*	18	7	397	698	103	47	13	*	1297
	ST GEORGE'S HEALTHCARE NHS TRUST	*	*	*	*	*	*	802	117	*	*	*	928
	HOMERTON UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	30	734	*	*	*	*	776
	KINGSTON HOSPITAL NHS TRUST	*	*	*	*	*	*	556	114	*	*	*	680
	LEWISHAM HEALTHCARE NHS TRUST	*	*	*	*	*	*	614	14	*	*	*	629
	CHELSEA AND WESTMINSTER HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	11	551	13	*	*	*	578
	ROYAL FREE HAMPSTEAD NHS TRUST	*	*	*	*	*	41	513	*	*	*	*	564
	KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	412	55	*	*	*	470
	THE WHITTINGTON HOSPITAL NHS TRUST	*	*	*	*	*	*	407	*	*	*	*	412
	NORTH MIDDLESEX UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	10	343	*	*	*	*	354
	NORTH WEST LONDON HOSPITALS NHS TRUST	*	*	*	*	*	8	339	*	*	*	*	348
	NEWHAM UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	*	194	*	*	*	*	197
	CROYDON HEALTH SERVICES NHS	*	*	*	*	*	*	150	7	*	*	*	158

	TRUST												
	BMI HEADQUARTERS	*	*	*	*	*	110	27	*	*	*	*	142
	WEST MIDDLESEX UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	*	127	*	*	*	*	130
	SPIRE HEALTHCARE	*	*	*	*	*	15	88	*	*	*	*	104
	Other	*	*	*	*	*	67	390	37	11	*	*	515
Q37	FRIMLEY PARK HOSPITAL NHS FOUNDATION TRUST	*	*	10	36	26	58	35	1566	1967	80	35	3819
	EAST KENT HOSPITALS UNIVERSITY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	3713	*	*	*	3720
	BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	*	1964	*	*	*	1975
	MAIDSTONE AND TUNBRIDGE WELLS NHS TRUST	*	*	*	*	*	*	*	1476	*	*	*	1478
	MEDWAY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	1261	*	*	*	1263
	EAST SUSSEX HOSPITALS NHS TRUST	*	*	*	*	*	*	*	972	*	*	*	973
	ROYAL SURREY COUNTY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	870	91	*	*	965
	ASHFORD AND ST PETER'S HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	155	760	15	*	*	933
	SURREY AND SUSSEX HEALTHCARE NHS TRUST	*	*	*	*	*	*	7	694	*	*	*	709
	WESTERN SUSSEX HOSPITALS NHS TRUST	*	*	*	*	*	*	*	386	74	*	*	460
	OTHER PRIVATE HEALTHCARE PROVIDERS	*	*	*	*	*	*	*	437	*	*	*	437
	SUSSEX ORTHOPAEDIC NHS TREATMENT CENTRE	*	*	*	*	*	*	*	343	*	*	*	344
	ASHTEAD HOSPITAL	*	*	*	*	*	*	43	193	*	*	*	236
	DARTFORD AND GRAVESHAM NHS TRUST	*	*	*	*	*	*	18	203	*	*	*	223
	THE HORDER CENTRE	*	*	*	*	*	*	*	186	*	*	*	193
	MID KENT NHS TREATMENT CENTRE	*	*	*	*	*	*	*	127	*	*	*	127
	BMI HEADQUARTERS	*	*	*	*	*	*	*	106	*	*	*	106
	Other	*	*	*	*	*	*	14	360	*	*	*	379
Q38	ROYAL BERKSHIRE NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	1945	*	*	1958
	BUCKINGHAMSHIRE HEALTHCARE NHS TRUST	*	*	*	13	*	269	12	*	1593	*	*	1901
	PORTSMOUTH HOSPITALS NHS TRUST	*	*	*	*	*	*	*	22	1141	15	*	1181

	HEATHERWOOD AND WEXHAM PARK HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	8	757	*	*	771
	MILTON KEYNES HOSPITAL NHS FOUNDATION TRUST	*	*	*	29	*	107	*	*	622	*	*	759
	NORTH HAMPSHIRE HOSPITALS NHS TRUST TREATMENT CENTRE	*	*	*	*	*	*	*	*	716	*	*	723
	OXFORD RADCLIFFE HOSPITALS NHS TRUST	*	*	*	45	10	7	*	*	548	15	*	634
	ISLE OF WIGHT NHS PCT	*	*	*	*	*	*	*	*	411	*	*	411
	SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	*	7	241	30	*	282
	WINCHESTER AND EASTLEIGH HEALTHCARE NHS TRUST	*	*	*	*	*	*	*	*	226	*	*	229
	BASINGSTOKE AND NORTH HAMPSHIRE NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	212	*	*	218
	BMI HEADQUARTERS	*	*	*	*	*	*	*	*	193	*	*	200
	NUFFIELD ORTHOPAEDIC CENTRE NHS TRUST	*	*	*	8	*	*	*	*	170	*	*	188
	Other	*	*	*	*	*	*	*	16	284	*	*	309
Q39	THE ROYAL BOURNEMOUTH AND CHRISTCHURCH HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	297	1723	*	2021
	DORSET COUNTY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	14	1913	*	1933
	POOLE HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	23	1783	*	1807
	NORTH BRISTOL NHS TRUST	*	*	*	*	12	*	*	*	*	1433	*	1457
	ROYAL UNITED HOSPITAL BATH NHS TRUST	*	*	*	*	*	*	*	*	*	1377	*	1379
	GLOUCESTERSHIRE HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	134	*	*	*	*	1008	*	1150
	GREAT WESTERN HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	54	922	*	984
	ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	937	*	941
	ROYAL CORNWALL HOSPITALS NHS TRUST	*	*	*	*	*	*	*	*	*	916	*	917
	TAUNTON AND SOMERSET NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	903	*	905
	SALISBURY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	92	660	*	756

	DORSET PCT	*	*	*	*	*	*	*	*	*	573	*	573
	SOUTH DEVON HEALTHCARE NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	552	*	553
	PLYMOUTH HOSPITALS NHS TRUST	*	*	*	*	*	*	*	*	*	490	*	490
	NORTHERN DEVON HEALTHCARE NHS TRUST	*	*	*	*	*	*	*	*	*	348	*	348
	SHEPTON MALLET NHS TREATMENT CENTRE	*	*	*	*	*	*	*	*	*	301	*	302
	YEOVIL DISTRICT HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	197	*	197
	WINFIELD HOSPITAL	*	*	*	*	*	*	*	*	*	131	*	138
	Other	*	*	*	*	*	*	*	*	17	306	*	324
Grand Total		7955	26946	16324	17464	18055	19495	22747	17592	12119	16788	951	176436

ACTIVITY PROFILE – SPECIALISED SURGERY EXTRA-DURAL CATEGORY (SS-ED)

		NORTH EAST	NORTH WEST	YORKSHIRE AND THE HUMBER	EAST MIDLANDS	WEST MIDLANDS	EAST OF ENGLAND	LONDON	SOUTH EAST COAST	SOUTH CENTRAL	SOUTH WEST	#N/A	Grand Total
	Population	2577541	6923826	5244957	4380276	5421595	5714218	7757619	4302299	4069352	5181449		51573132.45
	Total Episodes	1388	2570	2005	1711	2165	1958	2516	1583	1522	2308	414	20140
	Rate per 10,000 population	5	4	4	4	4	3	3	4	4	4		4
	Episodes												
	Org Name	NORTH EAST	NORTH WEST	YORKSHIRE AND THE HUMBER	EAST MIDLANDS	WEST MIDLANDS	EAST OF ENGLAND	LONDON	SOUTH EAST COAST	SOUTH CENTRAL	SOUTH WEST	#N/A	Grand Total
Q30	THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	753	86	*	*	*	*	*	*	*	*	13	860
	SOUTH TEES HOSPITALS NHS FOUNDATION TRUST	317	*	83	*	*	*	*	*	*	*	*	407
	NORTH TEES AND HARTLEPOOL NHS FOUNDATION TRUST	157	*	14	*	*	*	*	*	*	*	*	177
	CITY HOSPITALS SUNDERLAND NHS FOUNDATION TRUST	86	*	*	*	*	*	*	*	*	*	*	87
	SPIRE HEALTHCARE	49	*	*	*	*	*	*	*	*	*	*	53
	Other	16	*	*	*	*	*	*	*	*	*	10	27
Q31	SALFORD ROYAL NHS FOUNDATION TRUST	*	770	7	20	*	*	*	*	*	*	*	805
	LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	*	603	*	*	*	*	*	*	*	*	*	617
	THE WALTON CENTRE NHS FOUNDATION TRUST	*	448	*	*	*	*	*	*	*	*	118	571
	CENTRAL MANCHESTER UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	120	*	*	*	*	*	*	*	*	*	127
	WARRINGTON AND HALTON HOSPITALS NHS FOUNDATION TRUST	*	97	*	*	*	*	*	*	*	*	*	100
	ROYAL LIVERPOOL AND BROADGREEN UNIVERSITY HOSPITALS NHS TRUST	*	92	*	*	*	*	*	*	*	*	*	98

	ALDER HEY CHILDREN'S NHS FOUNDATION TRUST	*	61	*	*	8	*	*	*	*	*	15	87
	STOCKPORT NHS FOUNDATION TRUST	*	69	*	*	*	*	*	*	*	*	*	77
	Other	*	131	*	*	*	*	*	*	*	*	*	136
Q32	SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	*	*	492	166	*	*	*	*	*	*	*	664
	LEEDS TEACHING HOSPITALS NHS TRUST	*	9	608	*	*	*	*	*	*	*	*	630
	HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	*	*	471	20	*	*	*	*	*	*	*	493
	CLAREMONT & ST HUGH'S HOSPITALS (HMT)	*	*	68	34	*	*	*	*	*	*	*	105
	SHEFFIELD CHILDREN'S NHS FOUNDATION TRUST	*	*	55	18	*	*	*	*	*	*	*	77
	CALDERDALE AND HUDDERSFIELD NHS FOUNDATION TRUST	*	*	53	*	*	*	*	*	*	*	*	54
	Other	*	*	112	8	*	*	*	*	*	*	*	121
Q33	NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST	*	*	*	650	13	16	*	*	*	*	*	690
	DERBY HOSPITALS NHS FOUNDATION TRUST	*	*	*	205	56	*	*	*	*	*	*	262
	UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	*	*	*	139	*	*	*	*	*	*	*	145
	UNITED LINCOLNSHIRE HOSPITALS NHS TRUST	*	*	*	75	*	*	*	*	*	*	*	82
	NORTHAMPTON GENERAL HOSPITAL NHS TRUST	*	*	*	58	*	*	*	*	*	*	*	64
	Other	*	*	*	31	*	*	*	*	*	*	*	31
Q34	THE ROYAL ORTHOPAEDIC HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	579	*	*	*	*	8	*	611
	UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	*	*	*	24	477	*	*	*	*	*	*	509
	UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	*	*	*	*	443	*	*	*	*	*	9	461
	UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	*	25	*	*	253	*	*	*	*	*	*	287

	ROBERT JONES AND AGNES HUNT ORTHOPAEDIC AND DISTRICT HOSPITAL NHS TRUST	*	17	*	*	122	*	*	*	*	*	77	218
	Other	*	*	*	*	105	*	*	*	*	*	*	151
Q35	CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	29	*	379	*	*	*	*	*	416
	NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	234	*	*	*	*	*	236
	IPSWICH HOSPITAL NHS TRUST	*	*	*	*	*	138	*	*	*	*	*	140
	THE PRINCESS ALEXANDRA HOSPITAL NHS TRUST	*	*	*	*	*	86	*	*	*	*	*	89
	SOUTHEND UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	58	*	*	*	*	*	59
	Other	*	*	*	28	*	260	*	*	*	*	*	297
Q36	ROYAL NATIONAL ORTHOPAEDIC HOSPITAL NHS TRUST	*	*	*	8	*	253	324	121	41	13	22	788
	ST GEORGE'S HEALTHCARE NHS TRUST	*	*	*	*	*	*	320	177	20	*	16	541
	KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	225	275	*	*	*	514
	UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	71	283	44	13	*	11	437
	IMPERIAL COLLEGE HEALTHCARE NHS TRUST	*	*	*	*	*	14	262	27	34	*	*	346
	GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	*	*	*	*	*	11	136	94	*	*	17	263
	BARTS AND THE LONDON NHS TRUST	*	*	*	*	*	45	197	16	*	*	*	262
	BARKING, HAVERING AND REDBRIDGE UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	119	109	*	*	*	*	233
	ROYAL FREE HAMPSTEAD NHS TRUST	*	*	*	*	*	85	133	*	*	*	*	222
	GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS TRUST	*	*	*	*	*	49	85	38	*	8	7	197
	CROYDON HEALTH SERVICES NHS TRUST	*	*	*	*	*	*	96	10	*	*	*	106
	WHIPPS CROSS UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	17	73	*	*	*	*	90

	BARNET AND CHASE FARM HOSPITALS NHS TRUST	*	*	*	*	*	18	51	*	*	*	*	70
	THE HILLINGDON HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	55	*	*	*	*	63
	EPSOM AND ST HELIER UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	30	32	*	*	*	63
	Other	*	*	*	*	*	27	79	20	*	*	*	130
Q37	BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	*	247	*	*	*	251
	FRIMLEY PARK HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	51	76	*	*	138
	EAST SUSSEX HOSPITALS NHS TRUST	*	*	*	*	*	*	*	103	*	*	*	103
	ASHTEAD HOSPITAL	*	*	*	*	*	*	11	41	*	*	*	54
	EAST KENT HOSPITALS UNIVERSITY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	53	*	*	*	53
	Other	*	*	*	*	*	*	*	231	*	*	*	186
Q38	OXFORD RADCLIFFE HOSPITALS NHS TRUST	*	*	*	131	17	19	*	*	341	46	*	560
	SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	*	26	314	133	9	492
	NUFFIELD ORTHOPAEDIC CENTRE NHS TRUST	*	*	*	19	*	*	*	*	157	14	*	203
	ROYAL BERKSHIRE NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	155	*	*	158
	BUCKINGHAMSHIRE HEALTHCARE NHS TRUST	*	*	*	*	*	19	8	*	88	*	*	126
	PORTSMOUTH HOSPITALS NHS TRUST	*	*	*	*	*	*	*	*	116	*	*	123
	Other	*	*	*	*	*	*	*	*	95	*	*	103
Q39	NORTH BRISTOL NHS TRUST	*	*	*	*	8	*	*	*	*	685	*	703
	PLYMOUTH HOSPITALS NHS TRUST	*	*	*	*	*	*	*	*	*	419	*	422
	ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	301	8	313
	TAUNTON AND SOMERSET NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	204	*	210

	GREAT WESTERN HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	10	118	*	130
	GLOUCESTERSHIRE HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	7	*	*	*	*	92	*	105
	SALISBURY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	12	78	*	92
	DORSET COUNTY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	54	*	54
	Other	*	*	*	*	*	*	*	*	*	110	*	115
		1388	2570	2005	1711	2165	1958	2516	1583	1522	2308	414	20140

ACTIVITY PROFILE – ALL SPINAL

		NORTH EAST	NORTH WEST	YORKSHIRE AND THE HUMBER	EAST MIDLANDS	WEST MIDLANDS	EAST OF ENGLAND	LONDON	SOUTH EAST COAST	SOUTH CENTRAL	SOUTH WEST	#N/A	Grand Total
	Population	2577541	6923826	5244957	4380276	5421595	5714218	7757619	4302299	4069352	5181449		51573132
	Total Episodes	12024	34674	22672	22442	24388	25718	29447	22754	16590	23239	2109	236057
	Rate per 10,000 population	47	50	43	51	45	45	38	53	41	45		46
	Episodes												
	Org Name	NORTH EAST	NORTH WEST	YORKSHIRE AND THE HUMBER	EAST MIDLANDS	WEST MIDLANDS	EAST OF ENGLAND	LONDON	SOUTH EAST COAST	SOUTH CENTRAL	SOUTH WEST	#N/A	Grand Total
Q30	THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	4331	380	10	*	*	*	*	*	*	*	47	4775
	NORTH TEES AND HARTLEPOOL NHS FOUNDATION TRUST	2415	31	198	*	*	*	*	*	*	*	*	2661
	SOUTH TEES HOSPITALS NHS FOUNDATION TRUST	1884	29	547	*	*	*	*	*	*	*	8	2479
	COUNTY DURHAM AND DARLINGTON NHS FOUNDATION TRUST	982	*	13	*	*	*	*	*	*	*	*	997
	NORTHUMBRIA HEALTHCARE NHS FOUNDATION TRUST	895	21	*	*	*	*	*	*	*	*	*	916
	CITY HOSPITALS SUNDERLAND NHS FOUNDATION TRUST	878	*	*	*	*	*	*	*	*	*	*	882
	SPIRE HEALTHCARE	325	11	*	*	*	*	*	*	*	*	*	338
	GATESHEAD HEALTH NHS FOUNDATION TRUST	169	*	*	*	*	*	*	*	*	*	*	169
	TYNESIDE SURGICAL SERVICES LTD	*	*	*	*	*	*	*	*	*	*	155	155
	Other	113	*	*	*	*	*	*	*	*	*	*	118
Q31	PENNINE ACUTE HOSPITALS NHS TRUST	*	5080	26	*	*	*	*	*	*	*	*	5116
	SALFORD ROYAL NHS FOUNDATION TRUST	*	4411	29	73	7	*	*	*	*	*	18	4538
	LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	*	3724	18	*	*	*	*	*	*	*	18	3771
	THE WALTON CENTRE NHS FOUNDATION TRUST	*	2144	11	*	13	*	*	*	*	*	369	2549

	WARRINGTON AND HALTON HOSPITALS NHS FOUNDATION TRUST	*	2145	*	*	*	*	*	*	*	*	8	2165
	SOUTHPORT AND ORMSKIRK HOSPITAL NHS TRUST	*	1611	*	*	*	*	*	*	*	*	*	1616
	UNIVERSITY HOSPITAL OF SOUTH MANCHESTER NHS FOUNDATION TRUST	*	1423	*	11	7	*	*	*	*	*	*	1448
	UNIVERSITY HOSPITALS OF MORECAMBE BAY NHS FOUNDATION TRUST	*	1355	23	*	*	*	*	*	*	*	*	1382
	STOCKPORT NHS FOUNDATION TRUST	*	1098	*	162	15	*	*	*	*	*	*	1278
	WRIGHTINGTON, WIGAN AND LEIGH NHS FOUNDATION TRUST	*	1068	*	*	*	*	*	*	*	*	*	1071
	EAST LANCASHIRE HOSPITALS NHS TRUST	*	960	*	*	*	*	*	*	*	*	*	965
	TRAFFORD HEALTHCARE NHS TRUST	*	890	8	*	*	*	*	*	*	*	*	898
	BMI HEADQUARTERS	*	781	*	*	*	*	*	*	*	*	*	782
	COUNTESS OF CHESTER HOSPITAL NHS FOUNDATION TRUST	*	600	*	*	*	*	*	*	*	*	164	767
	WIRRAL UNIVERSITY TEACHING HOSPITAL NHS FOUNDATION TRUST	*	731	*	*	*	*	*	*	*	*	*	737
	BLACKPOOL TEACHING HOSPITALS NHS FOUNDATION TRUST	*	642	*	*	*	*	*	*	*	*	*	643
	ROYAL LIVERPOOL AND BROADGREEN UNIVERSITY HOSPITALS NHS TRUST	*	590	*	*	*	*	*	*	*	*	20	613
	TAMESIDE HOSPITAL NHS FOUNDATION TRUST	*	548	*	57	*	*	*	*	*	*	*	606
	NORTH CUMBRIA UNIVERSITY HOSPITALS NHS TRUST	*	576	*	*	*	*	*	*	*	*	9	587
	MID CHESHIRE HOSPITALS NHS FOUNDATION TRUST	*	555	*	*	22	*	*	*	*	*	*	582
	AINTREE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	575	*	*	*	*	*	*	*	*	*	577
	ROYAL BOLTON HOSPITAL NHS FOUNDATION TRUST	*	451	*	*	*	*	*	*	*	*	*	453
	BMI HEADQUARTERS	*	441	*	*	*	*	*	*	*	*	*	441
	ABBEY HOSPITALS	*	199	18	*	*	*	*	*	*	*	*	221
	CENTRAL MANCHESTER UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	163	*	*	*	*	*	*	*	*	*	178

	ALDER HEY CHILDREN'S NHS FOUNDATION TRUST	*	118	*	*	19	*	*	*	*	*	34	176
	SPIRE HEALTHCARE	*	145	*	*	*	*	*	*	*	*	*	147
	THE CHRISTIE NHS FOUNDATION TRUST	*	127	*	7	*	*	*	*	*	*	*	140
	FULWOOD HALL HOSPITAL	*	109	*	*	*	*	*	*	*	*	*	110
	Other	*	318	11	6	8	*	*	*	*	*	*	344
Q32	LEEDS TEACHING HOSPITALS NHS TRUST	*	34	3356	39	*	*	*	*	*	*	*	3447
	DONCASTER AND BASSETLAW HOSPITALS NHS FOUNDATION TRUST	*	*	2465	886	*	*	*	*	*	*	*	3359
	SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	*	46	2413	676	8	8	*	*	*	*	8	3159
	HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	*	*	2071	54	*	*	*	*	*	*	*	2129
	CALDERDALE AND HUDDERSFIELD NHS FOUNDATION TRUST	*	*	1962	*	*	*	*	*	*	*	*	1970
	MID YORKSHIRE HOSPITALS NHS TRUST	*	*	1899	*	*	*	*	*	*	*	*	1902
	BRADFORD TEACHING HOSPITALS NHS FOUNDATION TRUST	*	78	1502	*	7	*	*	*	*	*	*	1590
	SCARBOROUGH AND NORTH EAST YORKSHIRE HEALTH CARE NHS TRUST	*	*	1306	*	*	*	*	*	*	*	*	1310
	THE YORKSHIRE CLINIC	*	33	1164	*	*	*	*	*	*	*	*	1197
	YORK TEACHING HOSPITAL NHS FOUNDATION TRUST	*	*	751	*	*	*	*	*	*	*	*	753
	NORTHERN LINCOLNSHIRE AND GOOLE HOSPITALS NHS FOUNDATION TRUST	*	*	634	53	*	*	*	*	*	*	*	687
	CLAREMONT & ST HUGH'S HOSPITALS (HMT)	*	10	361	196	*	*	*	*	*	*	*	570
	THE ROTHERHAM NHS FOUNDATION TRUST	*	*	437	12	*	*	*	*	*	*	*	449
	SPIRE HEALTHCARE	*	*	349	*	*	*	*	*	*	*	*	355
	AIREDALE NHS FOUNDATION TRUST	*	27	274	*	*	*	*	*	*	*	*	301
	SPIRE HEALTHCARE	*	*	147	*	*	*	*	*	*	*	*	147
	SHEFFIELD CHILDREN'S NHS FOUNDATION TRUST	*	*	96	35	*	*	*	*	*	*	*	138
	Other	*	*	272	*	*	*	*	*	*	*	*	273

Q33	NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST	*	24	56	3967	217	109	*	*	*	14	8	4411
	UNITED LINCOLNSHIRE HOSPITALS NHS TRUST	*	*	47	2751	*	21	*	*	*	*	*	2821
	NOTTINGHAM NHS TREATMENT CENTRE(NATIONS HEALTHCARE)	*	*	41	2549	*	*	*	*	*	*	11	2606
	DERBY HOSPITALS NHS FOUNDATION TRUST	*	*	*	1600	312	*	*	*	*	*	*	1922
	UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	*	*	*	1720	8	*	*	*	*	*	7	1742
	NORTHAMPTON GENERAL HOSPITAL NHS TRUST	*	*	*	1490	*	16	*	*	51	*	*	1563
	SHERWOOD FOREST HOSPITALS NHS FOUNDATION TRUST	*	*	*	1430	*	*	*	*	*	*	*	1433
	CHESTERFIELD ROYAL HOSPITAL NHS FOUNDATION TRUST	*	*	24	1235	*	*	*	*	*	*	*	1264
	KETTERING GENERAL HOSPITAL NHS FOUNDATION TRUST	*	*	*	867	*	9	*	*	*	*	*	877
	Other	*	*	*	159	*	*	*	*	*	*	*	160
Q34	UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	*	*	*	239	2974	*	*	*	11	15	*	3246
	THE ROYAL ORTHOPAEDIC HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	3004	*	*	*	*	14	20	3061
	THE DUDLEY GROUP OF HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	2882	*	*	*	*	*	*	2893
	UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	*	*	*	12	2045	*	*	*	7	7	20	2101
	UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	*	122	*	*	1420	*	*	*	*	*	10	1562
	BIRMINGHAM TREATMENT CENTRE	*	*	*	*	1368	*	*	*	*	*	*	1372
	ROBERT JONES AND AGNES HUNT ORTHOPAEDIC AND DISTRICT HOSPITAL NHS TRUST	*	78	*	*	726	*	*	*	*	*	535	1346
	MID STAFFORDSHIRE NHS FOUNDATION TRUST	*	*	*	*	1095	*	*	*	*	*	*	1096
	THE ROYAL WOLVERHAMPTON HOSPITALS NHS TRUST	*	*	*	*	1023	*	*	*	*	*	*	1023

	WALSALL HEALTHCARE NHS TRUST	*	*	*	*	954	*	*	*	*	*	*	960
	WORCESTERSHIRE ACUTE HOSPITALS NHS TRUST	*	*	*	*	859	*	*	*	*	*	*	864
	HEART OF ENGLAND NHS FOUNDATION TRUST	*	*	*	*	819	*	*	*	*	*	*	823
	THE MIDLANDS NHS TREATMENT CENTRE	*	*	*	225	560	*	*	*	*	*	*	788
	SHREWSBURY AND TELFORD HOSPITAL NHS TRUST	*	*	*	*	650	*	*	*	*	*	38	692
	WORCESTERSHIRE PCT	*	*	*	*	558	*	*	*	*	16	*	576
	STOKE ON TRENT PCT	*	55	*	*	444	*	*	*	*	*	*	501
	GEORGE ELIOT HOSPITAL NHS TRUST	*	*	*	36	391	*	*	*	*	*	*	428
	SOUTH WARWICKSHIRE NHS FOUNDATION TRUST	*	*	*	9	399	*	*	*	*	*	*	417
	WYE VALLEY NHS TRUST	*	*	*	*	291	*	*	*	*	13	50	355
	BMI HEADQUARTERS	*	*	*	29	238	*	*	*	*	*	*	270
	CANNOCK CHASE TREATMENT CENTRE	*	*	*	*	119	*	*	*	*	*	*	119
	SPIRE HEALTHCARE	*	*	*	*	112	*	*	*	*	*	*	114
	Other	*	*	*	*	258	*	*	*	*	*	*	361
Q35	NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	2247	*	*	*	*	*	2253
	CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	63	*	2154	*	7	*	*	*	2245
	MID ESSEX HOSPITAL SERVICES NHS TRUST	*	*	*	*	*	2026	18	*	*	*	*	2045
	IPSWICH HOSPITAL NHS TRUST	*	*	*	*	*	2001	*	*	*	*	*	2011
	WEST HERTFORDSHIRE HOSPITALS NHS TRUST	*	*	*	*	*	1921	54	*	28	*	*	2006
	PETERBOROUGH AND STAMFORD HOSPITALS NHS FOUNDATION TRUST	*	*	*	594	*	1010	*	*	*	*	*	1610
	EAST AND NORTH HERTFORDSHIRE NHS TRUST	*	*	*	*	*	1547	*	*	*	*	*	1561
	SOUTHEND UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	1482	*	*	*	*	*	1488
	BASILDON AND THURROCK UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	1368	62	13	*	*	*	1445
	COLCHESTER HOSPITAL UNIVERSITY NHS FOUNDATION TRUST	*	*	*	*	*	1085	*	*	*	*	*	1090

	THE PRINCESS ALEXANDRA HOSPITAL NHS TRUST	*	*	*	*	*	987	19	*	*	*	*	1010
	FITZWILLIAM HOSPITAL	*	*	*	493	*	285	*	*	*	*	*	779
	THE QUEEN ELIZABETH HOSPITAL, KING'S LYNN. NHS FOUNDATION TRUST	*	*	*	57	*	633	*	*	*	*	*	691
	WEST SUFFOLK HOSPITALS NHS TRUST	*	*	*	*	*	638	*	*	*	*	*	646
	LUTON AND DUNSTABLE HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	422	*	*	27	*	*	450
	JAMES PAGET UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	379	*	*	*	*	*	381
	HINCHINGBROOKE HEALTH CARE NHS TRUST	*	*	*	18	*	346	*	*	*	*	*	364
	RIVERS HOSPITAL	*	*	*	*	*	267	*	*	*	*	*	269
	SPRINGFIELD HOSPITAL	*	*	*	*	*	190	*	*	*	*	*	194
	OAKS HOSPITAL	*	*	*	*	*	109	*	*	*	*	*	109
	Other	*	*	*	*	*	167	44	*	*	*	*	225
Q36	UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	*	*	39	49	39	464	1950	314	122	66	64	3140
	IMPERIAL COLLEGE HEALTHCARE NHS TRUST	*	*	*	*	*	64	2762	119	108	*	19	3084
	BARKING, HAVERING AND REDBRIDGE UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	489	2257	*	*	*	7	2761
	BARTS AND THE LONDON NHS TRUST	*	*	*	*	*	263	2259	111	7	8	7	2663
	BARNET AND CHASE FARM HOSPITALS NHS TRUST	*	*	*	*	*	564	1932	*	*	*	12	2520
	GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	*	8	*	18	12	95	1672	537	73	30	71	2519
	ROYAL NATIONAL ORTHOPAEDIC HOSPITAL NHS TRUST	*	*	*	28	11	698	1095	232	95	28	29	2227
	ST GEORGE'S HEALTHCARE NHS TRUST	*	*	*	*	*	*	1487	494	58	*	30	2084
	SOUTH LONDON HEALTHCARE NHS TRUST	*	*	*	*	*	*	1835	224	*	*	*	2063
	THE HILLINGDON HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	121	1700	29	78	*	*	1932
	WHIPPS CROSS UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	219	1682	*	*	*	*	1911

	EPSOM AND ST HELIER UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	1098	731	*	*	*	1836
	KING'S COLLEGE HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	9	916	576	9	*	*	1528
	ROYAL FREE HAMPSTEAD NHS TRUST	*	*	*	*	*	219	840	*	*	*	11	1081
	HOMERTON UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	30	741	*	*	*	*	783
	KINGSTON HOSPITAL NHS TRUST	*	*	*	*	*	*	579	124	*	*	*	713
	LEWISHAM HEALTHCARE NHS TRUST	*	*	*	*	*	*	654	15	*	*	*	670
	CHELSEA AND WESTMINSTER HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	11	608	17	7	*	*	643
	THE WHITTINGTON HOSPITAL NHS TRUST	*	*	*	*	*	*	464	*	*	*	*	469
	NORTH WEST LONDON HOSPITALS NHS TRUST	*	*	*	*	*	12	418	*	*	*	*	433
	CROYDON HEALTH SERVICES NHS TRUST	*	*	*	*	*	*	359	36	*	*	*	397
	NORTH MIDDLESEX UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	11	346	*	*	*	*	358
	GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS TRUST	*	*	*	*	*	87	151	61	12	10	14	344
	BMI HEADQUARTERS	*	*	*	*	*	201	52	*	10	*	*	270
	NEWHAM UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	*	218	*	*	*	*	222
	SPIRE HEALTHCARE	*	*	*	*	*	23	114	*	*	*	*	138
	WEST MIDDLESEX UNIVERSITY HOSPITAL NHS TRUST	*	*	*	*	*	*	131	*	*	*	*	134
	BMI HEADQUARTERS	*	*	*	*	*	*	83	30	*	*	*	113
	Other	*	*	*	*	*	46	366	31	7	*	*	452
Q37	FRIMLEY PARK HOSPITAL NHS FOUNDATION TRUST	*	*	12	39	28	71	47	1748	2221	84	40	4296
	EAST KENT HOSPITALS UNIVERSITY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	4153	*	*	*	4161
	BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	7	2582	*	*	8	2605
	EAST SUSSEX HOSPITALS NHS TRUST	*	*	*	*	*	*	*	1574	*	*	*	1579
	MAIDSTONE AND TUNBRIDGE WELLS NHS TRUST	*	*	*	*	*	*	*	1563	*	*	*	1566

	MEDWAY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	1380	*	*	*	1383
	ROYAL SURREY COUNTY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	1006	110	*	*	1120
	ASHFORD AND ST PETER'S HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	179	907	21	*	*	1111
	SURREY AND SUSSEX HEALTHCARE NHS TRUST	*	*	*	*	*	*	7	812	*	*	*	830
	SUSSEX ORTHOPAEDIC NHS TREATMENT CENTRE	*	*	*	*	*	*	*	549	*	*	*	551
	WESTERN SUSSEX HOSPITALS NHS TRUST	*	*	*	*	*	*	*	455	88	*	*	543
	OTHER PRIVATE HEALTHCARE PROVIDERS	*	*	*	*	*	*	*	507	*	*	*	507
	ASHTEAD HOSPITAL	*	*	*	*	*	*	59	348	*	*	*	409
	THE HORDER CENTRE	*	*	*	*	*	*	8	272	*	*	*	282
	DARTFORD AND GRAVESHAM NHS TRUST	*	*	*	*	*	*	20	236	*	*	*	259
	MID KENT NHS TREATMENT CENTRE	*	*	*	*	*	*	*	129	*	*	*	129
	BMI HEADQUARTERS	*	*	*	*	*	*	*	106	*	*	*	106
	Other	*	*	*	*	*	*	21	467	7	*	*	495
Q38	ROYAL BERKSHIRE NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	2485	*	*	2505
	BUCKINGHAMSHIRE HEALTHCARE NHS TRUST	*	*	*	22	*	336	28	*	1968	9	7	2381
	OXFORD RADCLIFFE HOSPITALS NHS TRUST	*	*	*	264	42	48	9	9	1209	96	*	1685
	PORTSMOUTH HOSPITALS NHS TRUST	*	*	*	*	*	*	*	41	1544	24	*	1624
	SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST	*	*	*	*	*	*	*	68	931	249	16	1277
	HEATHERWOOD AND WEXHAM PARK HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	7	16	1035	*	*	1064
	MILTON KEYNES HOSPITAL NHS FOUNDATION TRUST	*	*	*	33	*	117	*	*	693	*	*	845
	NORTH HAMPSHIRE HOSPITALS NHS TRUST TREATMENT CENTRE	*	*	*	*	*	*	*	*	720	*	*	727
	NUFFIELD ORTHOPAEDIC CENTRE NHS TRUST	*	*	*	46	17	*	*	*	590	34	*	699
	ISLE OF WIGHT NHS PCT	*	*	*	*	*	*	*	*	414	*	*	414

	BASINGSTOKE AND NORTH HAMPSHIRE NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	321	*	*	331
	BMI HEADQUARTERS	*	*	*	*	*	*	*	*	233	*	*	241
	WINCHESTER AND EASTLEIGH HEALTHCARE NHS TRUST	*	*	*	*	*	*	*	*	226	*	*	230
	SPIRE HEALTHCARE	*	*	*	*	*	*	*	*	101	*	*	102
	Other	*	*	*	*	*	*	*	21	266	55	*	353
Q39	NORTH BRISTOL NHS TRUST	*	7	*	*	44	*	*	*	9	3229	34	3338
	DORSET COUNTY HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	21	2277	*	2305
	THE ROYAL BOURNEMOUTH AND CHRISTCHURCH HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	297	1741	*	2039
	POOLE HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	23	1787	*	1811
	PLYMOUTH HOSPITALS NHS TRUST	*	*	*	*	*	*	*	*	*	1699	*	1703
	ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	1544	22	1575
	ROYAL UNITED HOSPITAL BATH NHS TRUST	*	*	*	*	*	*	*	*	*	1526	*	1530
	GLOUCESTERSHIRE HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	166	*	*	*	*	1321	10	1506
	TAUNTON AND SOMERSET NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	1353	10	1366
	GREAT WESTERN HOSPITALS NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	77	1257	*	1345
	SALISBURY NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	137	918	*	1065
	ROYAL CORNWALL HOSPITALS NHS TRUST	*	*	*	*	*	*	*	*	*	973	*	974
	DORSET PCT	*	*	*	*	*	*	*	*	*	573	*	573
	SOUTH DEVON HEALTHCARE NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	565	*	566
	NORTHERN DEVON HEALTHCARE NHS TRUST	*	*	*	*	*	*	*	*	*	459	*	459
	SHEPTON MALLET NHS TREATMENT CENTRE	*	*	*	*	*	*	*	*	*	322	*	323
	WINFIELD HOSPITAL	*	*	*	*	13	*	*	*	*	230	*	244

	YEOVIL DISTRICT HOSPITAL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	199	*	199
	UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	*	*	*	*	*	*	*	*	*	99	*	103
	Other	*	*	*	*	*	*	*	*	46	322	*	369

APPENDIX 11

NATIONAL DATA REVIEW

Data Analysis to support the work of the Spinal Taskforce

Introduction

This section of the report provides an overview of the main patterns and trends with regard to inpatient spinal services between 2006/7 and 2010/11 using Hospital Episodes Statistics (HES). The aim of the data analysis section is to provide a detailed description of the inpatient spinal services that are currently being provided (at the national level), identify trends over time and highlight geographical variations.

A key part of this process has involved identifying, categorising and grouping all the potential procedure codes that can be used to record spinal interventions. A similar process has been undertaken to identify and group the many diagnosis codes that can be used to indicate patients who might be in need of spinal services. It is anticipated that local commissioners will use this information, together with local information, to examine local patterns of provision, identify potential issues with regard to access and analyse variations in the types of services provided. The data in this report is mostly from 2010/11 (as this was the latest data available at the time of analysis) and therefore indicates activity for a specific period. Also, this report contains data at Trust level, which is designed to be illustrative rather than definitive, as volumes of activity for individual providers can vary from year to year, and small volumes of activity can be subject to sampling error. Data for more than one year should be accessed by local commissioners for a fuller analysis. Throughout the report where there are less than six patients, '<6' will be used rather than the exact number to prevent identification of individual patients.

The unit of activity in this analysis is finished inpatient episodes as these provide a detailed insight into the hospital activity associated with particular groups of patients. A finished consultant episode (FCE) is 'a period of admitted patient care under a consultant or allied healthcare professional within an NHS trust' (HESonline). This is not always the same as a single 'stay' in hospital (i.e. a spell), because a patient may be transferred from one consultant to another during their time in hospital. Most hospital services are charged for at the 'spell' level. The focus of this section is on in-patient episodes only (whether emergency, elective or transferred); poor recording of procedure and diagnosis information makes a similar analysis of activity in Emergency Department and outpatient settings impossible. Local commissioners may be able to work with providers to gain access to information about outpatient and Emergency Department attendances relating to spinal services.

Inpatient episodes have been analysed to identify hospital activity related to patient 'need' groups, based on the diagnoses recorded, and any spinal procedures that have taken place. These procedures have been grouped according to the complexity and nature of the operation (e.g. whether it is intra or extradural). This grouping process was undertaken by several clinicians who were part of the Spinal Taskforce. The table below sets out the groupings used and the types of procedures involved (a full list of the codes used is in Appendix 6 - Definition of needs groups). While we believe that procedure codes are recorded fairly accurately, we have reasonable evidence that diagnosis codes are sometimes less precise. Hence, where possible a combination of diagnosis codes and procedure codes have been used to identify activity that is related to a particular patient need group. However, in a number of cases, data recording indicates that procedure codes are a more reliable indication of volumes of activity, as will be demonstrated.

Table 1: Groupings of spinal procedures

Procedure grouping	Description of the types of procedures included
Pain -Neuro Modulation (P-NM)	Operative procedures to modulate pain
Specialist Surgical -Intradural (SS-ID)	All intradural spinal surgery
Specialist Surgical - Extradural (SS-ED)	All other extradural spinal surgery
Non-Specialist-Surgical (NS-S)	Primary lumbar decompressions and lumbar instrumented fusions
Non-Specialist Non-Surgical (NS-NS)	Mainly spinal injections: epidurals, nerve root injections and facet joint injections

(Note: a full list of the codes used are included in appendix X.)

The first section of the analysis looks at trends in activity patterns for spinal procedures overall. This is followed by a consideration of the types of activity associated with particular groups of patients who require spinal services.

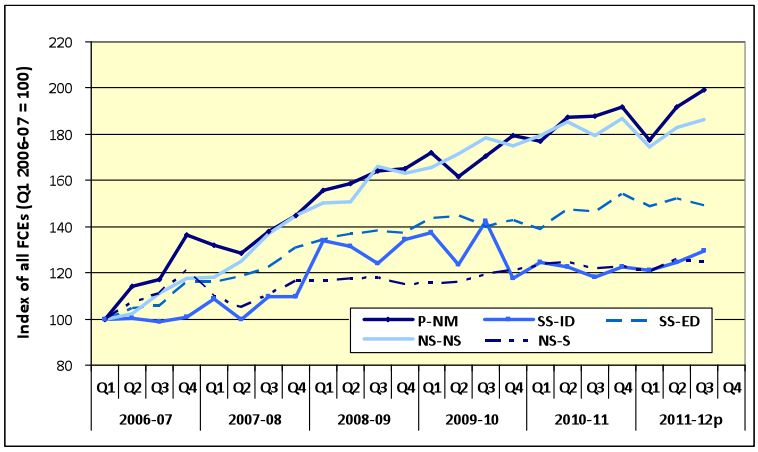
I) Overview of spinal procedures, trends and waiting times

The number of Finished Consultant Episodes (FCEs) involving spinal procedures has risen by over 50% in the last four years (Table 2). Within this, pain and neuro modulation and non-specialist non-surgical procedures have risen most – over 80% – whilst specialist surgical-intradural and non-specialist-surgical procedures rose by just over 20% (Chart 1).

Table 2: Finished Consultant Episodes by type of spinal procedure

Surgery Type	2006-07		2007-08		2008-09		2009-10		2010-11	
Pain and neuro modulation	6,349	4%	7,365	4%	8,728	4%	9,277	4%	10,101	4%
Specialist surgery -intradural	1,989	1%	2,131	1%	2,610	1%	2,592	1%	2,428	1%
Specialist surgery -extradural	14,618	10%	16,738	9%	18,758	9%	19,594	9%	20,141	9%
Non-specialist surgery	24,011	16%	24,161	14%	25,544	12%	25,816	12%	26,955	11%
Non-specialist non-surgical	104,151	69%	126,724	72%	152,283	73%	166,680	74%	176,456	75%
Total	151,118		177,119		207,923		223,959		236,081	
Annual Increase			**+ 17%**		**+17%**		**+ 8%**		**+ 5%**	

Chart 1: Trend in types of Spinal procedure as an index (Q1 2006-07 = 100)



Source: Hospital Episodes Statistics (HES), The Information Centre for Health and Social Care, 2011-12 is provisional

Summary statistics for 2010-11 indicate that over 95% of all spinal surgery is elective (Table 3). However, this varies by type and a quarter of specialist surgical intradural procedures are for emergency admissions, with specialist surgical extradural procedures also common for emergencies (often not the initial admission episode). Lengths of stay are substantially longer for emergency patients than for elective patients receiving spinal surgery. Table 3 shows the mean age of patients having spinal procedures is low (44-57 years). The fact that the average patient is of working age raises the question of whether a societal perspective should be taken when considering the costs and benefits associated with spinal procedures.

Table 3: Spinal procedures summary statistics by type, 2010-11

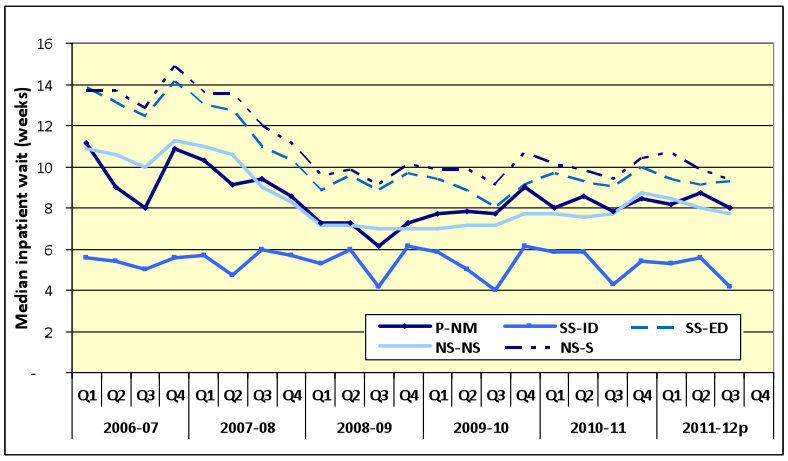
	P-NM	NS-NS	NS-S	SS-ED	SS-ID	Total
Total FCEs	**10,101**	**176,456**	**26,955**	**20,141**	**2,428**	**236,081**
Emergency activity						
FCEs	189	2,194	2,384	3,503	639	8,909
Finished admissions	151	1,494	1,812	2,354	498	6,309
Mean patient age	48	54	48	57	44	52
Mean length of stay (days)	9.9	10.0	8.5	17.6	14.4	12.7
Elective activity						
FCEs	9,883	173,799	24,032	15,603	1,597	224,914
Finished admissions	9,862	173,682	23,963	15,483	1,559	224,549
Mean patient age	51	58	54	50	47	57
Mean length of stay (days)	4.1	1.4	3.1	4.8	7.5	3.6
Planned elective admissions	4,726	52,737	1,364	1,149	220	60,196

Waiting list & booked admissions	5,136	120,945	22,599	14,334	1,339	164,353
Mean wait (weeks)	10.2	9.8	11.8	12.2	8.0	10.3
Median wait (weeks)	8.1	7.9	10.0	9.4	5.4	8.1
% day cases	78%	97%	5%	4%	16%	75%

(Note: FCEs (Finished consultant episodes) includes procedures after the admission episode. Planned elective admissions are excluded from waiting time figures. HES waiting times are from decision to admit to admission (not from referral)).

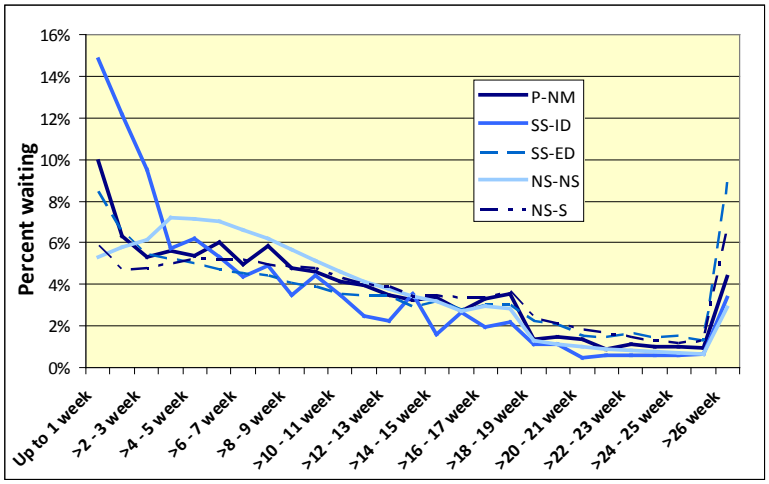
For elective patients, the number of planned admissions also varies by type of surgery, with nearly half the elective pain and neuro modulation procedures planned. For waiting list and booked procedures, the majority of pain and neuro modulation and non-specialist non-surgical procedures were performed as day surgery. In 2010-11 the median wait from the decision to admit to admission was 8.1 weeks (mean 10.3 weeks). Following substantial reductions in waits to 2008-09, the waits for many non-specialist and pain and neuro modulation procedures have subsequently risen (Chart 2).

Chart 2: Trend in times waited for elective inpatient types of spinal procedures



A large group of patients were treated within a few weeks of the decision to admit for specialist intradural surgery (Chart 3) and the majority of patients for all types of surgery were admitted within 18 weeks of the decision to admit (waits are not available from referral). However, there was also a sizeable group of patients waiting over 26 weeks for their admission.

Chart 3: Waiting time distribution for types of spinal surgery, 2010-11



II) Detailed Analysis by patient 'need' group

A) Back pain / Radicular pain – Cervical and Lumbar

i. DEFINITION OF PATIENT GROUP

Individuals with back pain (cervical and lumbar) and radicular pain are the largest groups of patients who require spinal services. These patients have been grouped within this analysis, as extensive evaluation of the data has demonstrated that there is considerable overlap in terms of the diagnosis codes used. This will be discussed in further detail in the sections relating to surgical procedures.

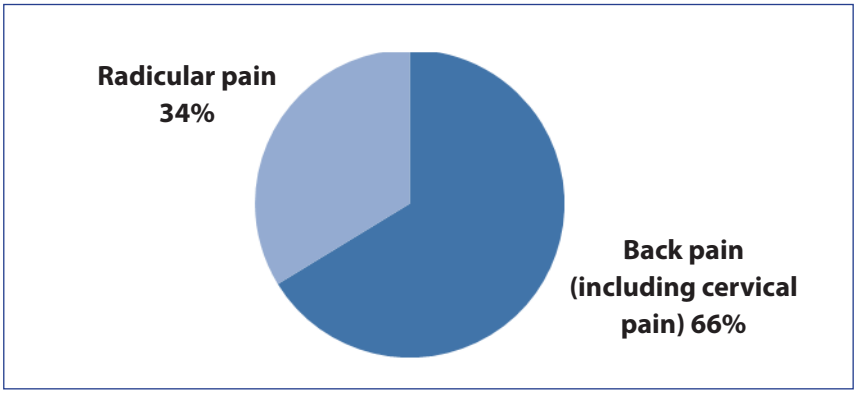
In order to analyse activity associated with this group, patients were identified who had a primary diagnosis indicating back pain or radicular pain. There are many diagnosis codes (ICD10 codes) which can be used to indicate these conditions, and all the codes which had an association with back and radicular pain such as dorsalgia, unspecified spondylosis and cervicalgia were included as is demonstrated in the table below.

Table 4 – Diagnosis Codes used to define Back pain and Radicular pain

Patient group	ICD 10 Code
Back pain (including Spondylolisthesis)	G549 Nerve root and plexus disorder, unspecified; G952 Cord compression, unspecified; M257 Osteophyte; M430 Spondylolysis; M431 Spondylolisthesis; M471 Other spondylosis with myelopathy; M500 Cervical disc disorder with myelopathy; M501 Cervical disc disorder with radiculopathy; M502 Other cervical disc displacement; M503 Other cervical disc degeneration; M508 Other cervical disc disorders;M509 Cervical disc disorder, unspecified; M478 Other spondylosis; M479 Spondylosis, unspecified; M503 Other cervical disc degeneration; M513 Other specified intervertebral disc degeneration; M514 Schmorl's nodes; M518 Other specified intervertebral disc disorders; M519 Intervertebral disc disorder, unspecified; M532 Spinal instabilities; M538 Other specified dorsopathies; M539 Dorsopathy, unspecified; M542 Cervicalgia; M545 Low backpain; M546 Pain in thoracic spine; M548 Other dorsalgia; M549 Dorsalgia, unspecified; Q762 Congenital spondylolisthesis; S134 Sprain and strain of cervical spine; S233 Sprain and strain of thoracic spine; S335 Sprain and strain of lumbar spine; S336 Sprain and strain of sacroiliac joint; S337 Sprain and strain other and unspecified parts lumbar spine and pelvis.
Radicular pain	G551 Nerve root and plexus compressions in intervertebral disc disorder; G552 Nerve root and plexus compressions in spondylosis; M472 Other spondylosis with radiculopathy; M480 Spinal Stenosis; M501 Cervical disc disorder with radiculopathy; M502 Other cervical disc displacement; M510 Lumbar and other intravertebral disc disorders with mylopathy; M511 Lumbar and other intervertbral disc disorders with radiculopathy; M512 Other specified intervertebral disc displacement; M541 Radiculopathy; M543 Sciatica; M544 Lumbago with sciatica.

The highest proportion of patients included in this analysis were recorded as having back pain, as is demonstrated in the chart below. However, when the initial analysis was performed it was found that a large number of patients with a primary diagnosis of back pain were having nerve root injections (a procedure for radicular pain) and a large number of patients with a diagnosis of radicular pain were having facet joint injections (a procedure for back pain). It was therefore decided to combine patients with back pain and radicular pain for the purposes of this report.

Chart 4: Patients with back pain/ radicular pain - diagnosis codes (2010-11)



(Note: FCEs. Based on primary diagnosis code. Refer to endnotes for exclusions)

ii. PATIENTS WITH BACK PAIN/ RADICULAR PAIN - GENERAL OVERVIEW OF ACTIVITY

There were just over 286,000 FCEs associated with a diagnosis of back pain or radicular pain in 2010/11 (including patients with cervical pain). As is shown in the table below, over half of these patients received non-specialist non-surgical procedures, which are largely injections (53%), while around a quarter had no procedure recorded (or had diagnostic imaging or testing, 26%).

Table 5: Patients with back pain/ radicular pain - procedure groupings for FCEs (2010-11)

Surgery Type	Count	Consultant Speciality (Main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Trans
Extradural Specialist Surgery	10,890	38%	60%	2%	8%	89%	2%
Non-Specialist Surgery	23,823	58%	39%	3%	6%	92%	1%
Intradural Specialist Surgery	212	17%	8%	75%	3%	97%	0%
Pain & Neuro Modulation	4,487	11%	6%	83%	1%	99%	0%
Non-Specialist Non-Surgical procedures	150,358	26%	2%	72%	1%	99%	0%
Non-spinal procedure only	22,859	19%	2%	79%	11%	87%	2%
No procedure recorded / Diag. imaging and tests	73,456	19%	5%	76%	83%	15%	2%
Total	**286,085**	**26%**	**8%**	**66%**	**23%**	**76%**	**1%**

(Note: FCEs. Based on primary diagnosis code. Refer to endnotes for exclusions)

The speciality of the consultant responsible for the patient varied according to the type of procedure undertaken. For example, the overwhelming majority of people who received extradural surgery were under the care of an orthopaedic surgeon or neurosurgeon (98%), whilst those who received an injection (a non-specialist non-surgical procedure) were more likely to be cared for by an anaesthetist (66%).

For those patients who had a non-spinal procedure, the main procedures received were intramuscular or subcutaneous injections (X37-8; 23%), acupuncture/electroacupuncture (A705, A706; 21%) or Injection into a joint (W903- W904, 8%). The tables below show the Trusts with the highest number of FCEs recorded for injections and acupuncture. For all providers the median length of stay was zero days. Patients who received non-spinal procedures were mainly under the care of anaesthetists (60% of all patients with non-spinal procedures) and orthopaedics consultants (9%). Based on 2012/13 tariff the cost of acupuncture/electroaccupuncture would be approximately £920,000 (excluding the market forces factor).

Table 6: Patients with back pain/ radicular pain - receiving intramuscular or subcutaneous injections (X37-X38) – elective admissions only (2010-11)

SCG	Provider	Count
NW	Pennine Acute Hospitals NHS Trust	202
NW	Wrightington, Wigan And Leigh NHS Foundation Trust	150
NW	University Hospital Of South Manchester NHS Foundation Trust	111
NW	Blackpool Teaching Hospitals NHS Foundation Trust	46
YH	York Teaching Hospital NHS Foundation Trust	43
EM	Derby Hospitals NHS Foundation Trust	402
EM	Nottingham NHS Treatment Centre(Nations Healthcare)	131
EM	Kettering General Hospital NHS Foundation Trust	65
WM	Birmingham Treatment Centre	226
WM	Robert Jones And Agnes Hunt Orthopaedic And District Hospital NHS Trust	172
WM	The Dudley Group Of Hospitals NHS Foundation Trust	79
WM	The Midlands NHS Treatment Centre	48
WM	University Hospitals Birmingham NHS Foundation Trust	41
EE	Peterborough And Stamford Hospitals NHS Foundation Trust	80
LON	Lewisham Healthcare NHS Trust	300
LON	Imperial College Healthcare NHS Trust	184
LON	Kingston Hospital NHS Trust	168

LON	Epsom And St Helier University Hospitals NHS Trust	99
LON	Whipps Cross University Hospital NHS Trust	44
SEC	Brighton And Sussex University Hospitals NHS Trust	409
SEC	East Kent Hospitals University NHS Foundation Trust	210
SEC	Frimley Park Hospital NHS Foundation Trust	48
SC	Oxford Radcliffe Hospitals NHS Trust	167
SW	Gloucestershire Hospitals NHS Foundation Trust	96
SW	Dorset County Hospital NHS Foundation Trust	93
SW	Royal United Hospital Bath NHS Trust	67
	Other Providers <40 Fces (n=104)	921
	Total	**4,602**

Table 7: Patients with back pain/ radicular pain - receiving acupuncture/electroaccupuncture (A705, A706) – elective admissions only (2010-11)

SCG	Provider	Count
NE	North Tees And Hartlepool NHS Foundation Trust	79
YH	Leeds Teaching Hospitals NHS Trust	514
YH	York Teaching Hospital NHS Foundation Trust	280
YH	Scarborough And North East Yorkshire Health Care NHS Trust	207
WM	University Hospitals Coventry And Warwickshire NHS Trust	1099
WM	South Warwickshire NHS Foundation Trust	412
WM	George Eliot Hospital NHS Trust	116
LON	The Whittington Hospital NHS Trust	953
SEC	Brighton And Sussex University Hospitals NHS Trust	23
SC	Portsmouth Hospitals NHS Trust	303
SC	Winchester And Eastleigh Healthcare NHS Trust	59

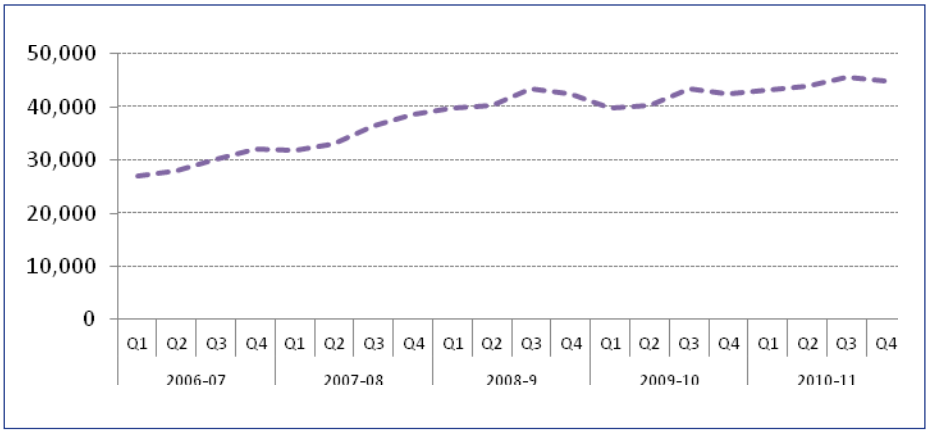
	Other Providers <20 FCEs (n=12)	43
	Total	**4,088**

(Patients with neck pain are excluded)

There were 208 FCEs associated with an intradural procedure. Most of these procedures were dorsal rhizotomies, mostly performed by anaesthetic consultants (A572 Rhizotomy of spinal nerve root, 157 FCEs) (Table 5).

The chart below demonstrates an increase in procedures carried out for a patient with a diagnosis of back/ radicular pain over the last five years.

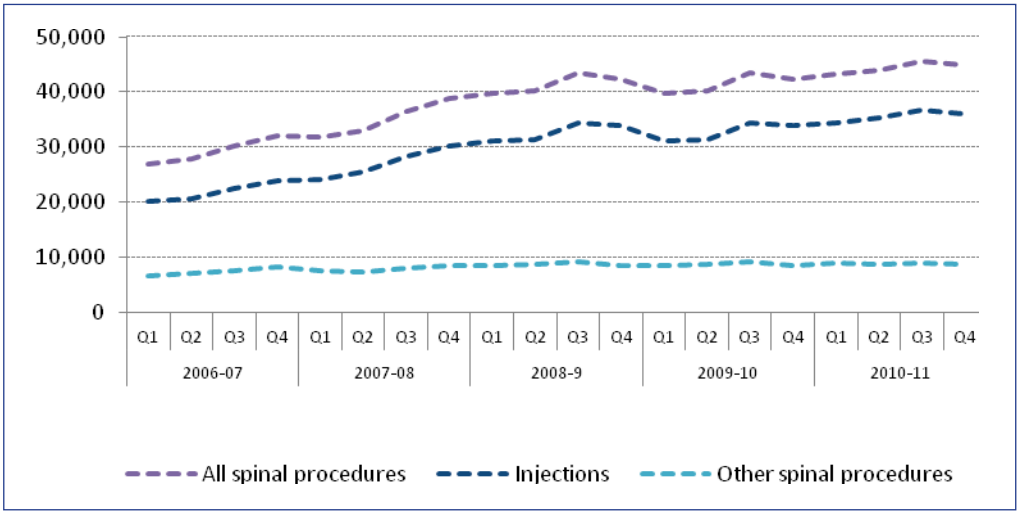
Chart 5: Patients with back pain/ radicular pain - total FCEs with spinal procedures recorded per month (April 06-Mar 11)



(Note: includes all FCEs defined as PNM, NSNS, NSS, SSID, SSED, Patients with neck pain are excluded)

It is evident that much of the increase is associated with an increase in injections (non-surgical non-specialist procedures) (see chart 6).

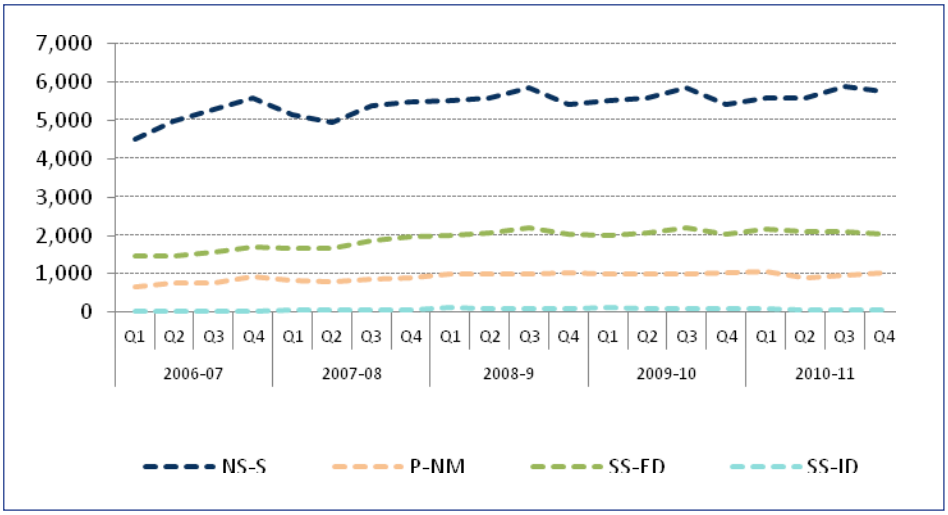
Chart 6: Patients with back pain/radicular pain - spinal procedures recorded- FCEs associated with back pain and radicular pain, overall count compared with injection count (totals recorded per quarter)



(Note: Total includes all FCEs defined as P-NM, NS-NS, NS-S, SS-ID, SS-ED, Injections = FCEs defined as NS-NS)

The chart below demonstrates trends for other kinds of procedures and shows that for procedures which are associated with non-specialist surgery, there has been a slight increase over time. Intradural surgery has remained static at a low level.

Chart 7: Patients with back pain/ radicular pain - spinal procedures recorded - FCEs associated with back pain, by procedure type, excluding injections (totals recorded per month April 06-Mar 11)



(Injections = FCEs defined as NS-NS)

iii. PATIENTS WITH BACK PAIN/ RADICULAR PAIN –WITH DIAGNOSTIC IMAGING/ TESTS OR NO PROCEDURE RECORDED

In 2010/11, there were just over 71,400 FCEs with a diagnosis of back or radicular pain where no procedure was recorded, or where the patient received diagnostic imaging / diagnostic test as the main procedure. The majority of FCEs were emergency admissions (83%) and only one in five were under the care of a consultant working in Orthopaedics (19%). The highest number were under the care of Emergency Consultants (24%) or consultants working in General Medicine (19%).

These patients mostly code into Healthcare Resource Group (HRG) HC27C which based on a 45% reduction of emergency tariff for short-stay will cost £481 each admission, a total cost of approximately £34m.

Table 8: Patients with back pain / radicular pain & no procedure or diagnostic imaging / diagnostic test (emergency admission) – provider and length of stay – admissions under Emergency Consultants (2010-11)

SCG	Provider	Count	Median LOS
NE	**Northumbria Healthcare NHS Foundation Trust**	617	0
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	244	0
NE	**County Durham And Darlington NHS Foundation Trust**	237	0
NW	**St Helens And Knowsley Hospitals NHS Trust**	377	0
NW	**Royal Liverpool And Broadgreen University Hospitals NHS Trust**	364	0

NW	**Salford Royal NHS Foundation Trust**	325	1
NW	**Central Manchester University Hospitals NHS Foundation Trust**	250	1
NW	**Aintree University Hospitals NHS Foundation Trust**	226	1
NW	**Blackpool Teaching Hospitals NHS Foundation Trust**	215	0
NW	**Mid Cheshire Hospitals NHS Foundation Trust**	209	0
YH	**Leeds Teaching Hospitals NHS Trust**	519	0
YH	**Calderdale And Huddersfield NHS Foundation Trust**	275	0
YH	**The Rotherham NHS Foundation Trust**	217	0
EM	**University Hospitals Of Leicester NHS Trust**	229	0
WM	**Heart Of England NHS Foundation Trust**	401	0
WM	**University Hospitals Coventry And Warwickshire NHS Trust**	396	0
WM	**University Hospital Of North Staffordshire NHS Trust**	249	0
LON	**Imperial College Healthcare NHS Trust**	516	0
LON	**Barking, Havering And Redbridge University Hospitals NHS Trust**	352	0
LON	**The Hillingdon Hospitals NHS Foundation Trust**	336	0
LON	**Epsom And St Helier University Hospitals NHS Trust**	318	0
LON	**St George's Healthcare NHS Trust**	299	0
LON	**Barnet And Chase Farm Hospitals NHS Trust**	295	0
LON	**Guy's And St Thomas' NHS Foundation Trust**	280	0
LON	**Barts And The London NHS Trust**	227	0
LON	**Whipps Cross University Hospital NHS Trust**	213	0
LON	**King's College Hospital NHS Foundation Trust**	200	0
SEC	**Brighton And Sussex University Hospitals NHS Trust**	372	0
SEC	**Frimley Park Hospital NHS Foundation Trust**	262	0
SEC	**Western Sussex Hospitals NHS Trust**	255	0
SEC	**East Kent Hospitals University NHS Foundation Trust**	227	0
SEC	**East Sussex Healthcare NHS Trust**	226	0

SEC	**Maidstone And Tunbridge Wells NHS Trust**	209	0
SC	**University Hospital Southampton NHS Foundation Trust**	426	0
SW	**Plymouth Hospitals NHS Trust**	217	1
SW	**Royal Cornwall Hospitals NHS Trust**	206	0
	Other <200 FCEs	6,578	0
	Total	**17,364**	**0**

(Note: Main speciality = 180. Injections = FCEs defined as NS-NS)

Table 9: Patients with back pain / radicular pain & no procedure or diagnostic imaging / diagnostic test (emergency admission) – provider and length of stay – admissions under general medicine consultants (2010-11)

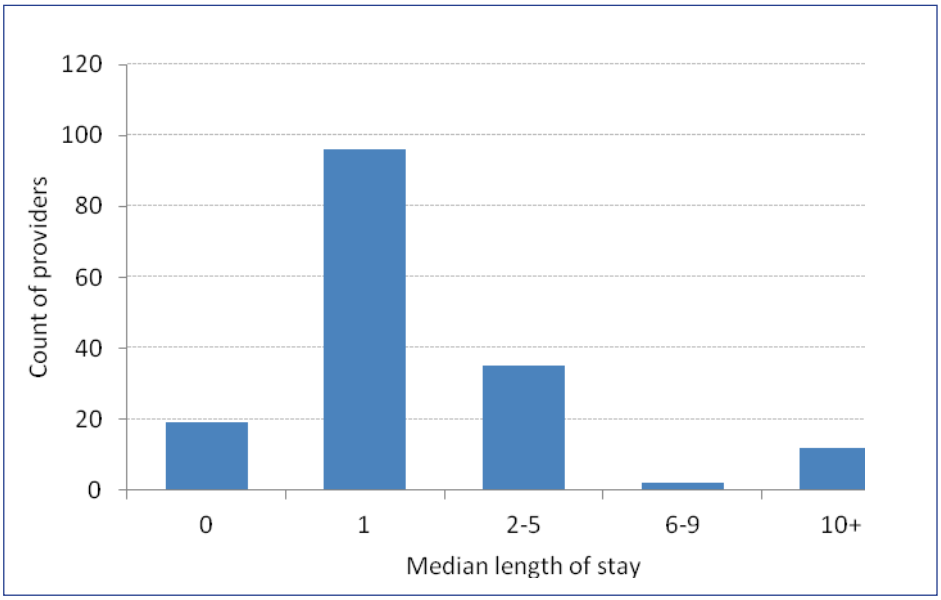
SCG	Provider	Count	Median LOS
NE	**County Durham And Darlington NHS Foundation Trust**	218	1
NE	**North Tees And Hartlepool NHS Foundation Trust**	189	1
NE	**South Tees Hospitals NHS Foundation Trust**	188	1
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	180	4
NE	**Gateshead Health NHS Foundation Trust**	141	1
NW	**East Lancashire Hospitals NHS Trust**	419	2
NW	**Pennine Acute Hospitals NHS Trust**	309	1
NW	**Royal Liverpool And Broadgreen University Hospitals NHS Trust**	135	1
NW	**Lancashire Teaching Hospitals NHS Foundation Trust**	131	2.5
YH	**Mid Yorkshire Hospitals NHS Trust**	205	1
YH	**Leeds Teaching Hospitals NHS Trust**	145	1
EM	**Nottingham University Hospitals NHS Trust**	401	1
EM	**University Hospitals Of Leicester NHS Trust**	381	2.5
EM	**United Lincolnshire Hospitals NHS Trust**	189	2
EM	**Derby Hospitals NHS Foundation Trust**	154	1

EM	**Chesterfield Royal Hospital NHS Foundation Trust**	133	2
WM	**Heart Of England NHS Foundation Trust**	463	1
WM	**The Royal Wolverhampton Hospitals NHS Trust**	165	1
WM	**University Hospital Of North Staffordshire NHS Trust**	155	1
WM	**The Dudley Group Of Hospitals NHS Foundation Trust**	151	1
WM	**Shrewsbury And Telford Hospital NHS Trust**	142	2
WM	**University Hospitals Coventry And Warwickshire NHS Trust**	137	4
WM	**Sandwell And West Birmingham Hospitals NHS Trust**	137	0
LON	**South London Healthcare NHS Trust**	141	3
SW	**Royal Cornwall Hospitals NHS Trust**	201	1
SW	**The Royal Bournemouth And Christchurch Hospitals NHS Foundation Trust**	162	2
	Trusts <130 FCEs	7,651	1
	Total	**13,023**	**1**

(Note: Main speciality = 300, Injections = FCEs defined as NS-NS)

The median length of stay for an emergency admission with no procedure recorded or with diagnostic imaging / diagnostic test as the main procedure was 1 day. However, this varied across providers as is shown in the chart below (providers with fewer than 10 FCEs are not considered for LoS analysis).

Chart 8: Patients with back pain / radicular pain & no procedure or diagnostic imaging / diagnostic test (emergency admission) - length of stay by number of providers (2010-11)



(Note: FCEs. Based on primary diagnosis code. Refer to endnotes for exclusions, providers with less than 10 FCEs were excluded from this analysis, as were FCEs with no LOS recorded)

There were 115 providers with a median length of stay of zero days or one day (see chart above). The table below demonstrates those providers with the highest number of admissions where no procedure is recorded and the median length of stay.

Table 10: Patients with back pain / radicular pain no procedure or diagnostic imaging / diagnostic test (emergency admission) – provider and length of stay – providers with over 600 FCEs (2010-11)

SCG	Provider	Count	Median LOS
NE	**Northumbria Healthcare NHS Foundation Trust**	1020	0
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	822	1
NW	**Pennine Acute Hospitals NHS Trust**	977	1
NW	**Royal Liverpool And Broadgreen University Hospitals NHS Trust**	780	1
NW	**Central Manchester University Hospitals NHS Foundation Trust**	659	1
NW	**Aintree University Hospitals NHS Foundation Trust**	655	1
NW	**Salford Royal NHS Foundation Trust**	635	1
YH	**Leeds Teaching Hospitals NHS Trust**	1254	1
YH	**Hull And East Yorkshire Hospitals NHS Trust**	734	2
YH	**Calderdale And Huddersfield NHS Foundation Trust**	606	1
EM	**Nottingham University Hospitals NHS Trust**	981	1
EM	**University Hospitals Of Leicester NHS Trust**	834	1
EM	**United Lincolnshire Hospitals NHS Trust**	676	1
EM	**Derby Hospitals NHS Foundation Trust**	670	1
WM	**Heart Of England NHS Foundation Trust**	1045	1
WM	**University Hospitals Coventry And Warwickshire NHS Trust**	736	1
LON	**Imperial College Healthcare NHS Trust**	793	1
LON	**Barnet And Chase Farm Hospitals NHS Trust**	748	0
LON	**Barking, Havering And Redbridge University Hospitals NHS Trust**	746	1
SEC	**East Kent Hospitals University NHS Foundation Trust**	752	1
SEC	**Western Sussex Hospitals NHS Trust**	704	1
SEC	**Brighton And Sussex University Hospitals NHS Trust**	652	1

SC	**University Hospital Southampton NHS Foundation Trust**	625	0
	Other <600 FCEs (n=41,225)	41,225	1
	Total	**59,329**	**1**

(Note: only FCES with LOS data were included in the los analysis)

iv. PATIENTS WITH BACK PAIN/ RADICULAR PAIN - INJECTIONS

In 2010/11, there were just fewer than 150,000 episodes associated with an injection, where the patient had a diagnosis of back pain or radicular pain (excluding patients with a main diagnosis of neck pain). Overwhelmingly, these episodes were elective (99%) and only a quarter were under the care of an orthopaedics consultant (26%).

As is shown in the table below, the highest proportion of respondents received an injection around spinal facet (V544), which accounted for two fifths of procedures in this group (41%).

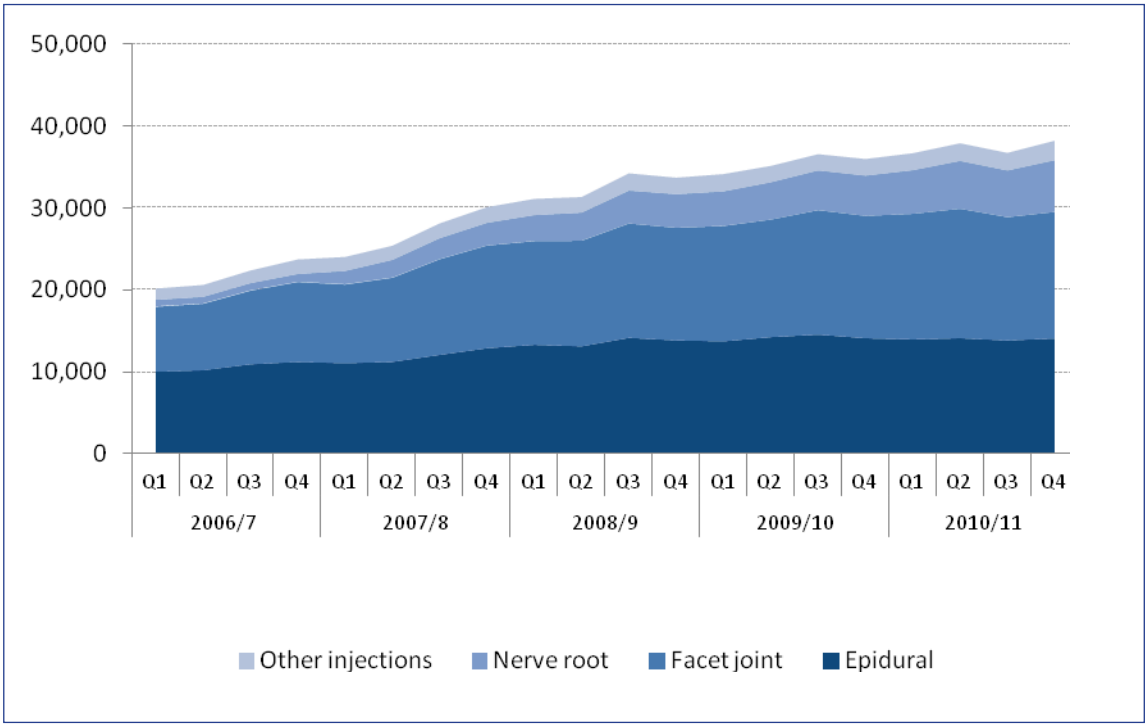
Table 11: Patients with back pain/ radicular pain - injections recorded (main procedure) (2010-11)

Surgery Type	Count	Consultant Speciality (Main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Facet joint	61,096	18%	1%	80%	0.3%	100%	0.02%
Epidural	55,720	31%	2%	66%	1%	99%	0.02%
Nerve root	23,186	36%	3%	61%	2%	98%	0.1%
Other	8,800	13%	1%	86%	0.3%	100%	0.1%
Total	**148,802**	**26%**	**2%**	**72%**	**1%**	**99%**	**0.03%**

(Note: FCEs. Based on primary diagnosis code. Facet joint injections = V544, nerve root = A577, A735, Epidural = A521-A529, other = all other injection codes. Note: based on first diagnosis and main diagnosis only. Refer to endnotes for further exclusions)

The chart below shows the increase in the number of injections carried out for back and radicular pain over the last five years. It is evident that the growth in injections has mainly been related to increases in the volume of facet joint injections (around 40% of the overall growth). The number of nerve root injections has increased substantially but from a low base. Provisional data for 2011/12 suggests that there has been a slight decrease in the number of facet joint injections (around 6%), but an increase in other kinds of injections.

Chart 9: Trends in injections for back and radicular pain from 2006/7



As is evident in the table above, these injections were overwhelmingly carried out as an elective procedure, and 97% were admitted as a day case. There were 3,687 ordinary admissions, with an overall median length of stay of one day. Only one provider had a length of stay over one day (looking at providers with more than 10 cases with LOS recorded).

If we look at all 'spinal' injections carried out (as the main procedure), regardless of the patient's main diagnosis, it is evident that a further 25,000 are recorded for a range of diagnoses. The majority of these relate to an 'Injection of therapeutic substance around peripheral nerve' (A735), which can be used as the code for a nerve root injection, but can also be used for carpal tunnel injections and other injections around peripheral nerves, which would quite correctly not carry a diagnosis of back or radicular pain. This code was the only code for spinal nerve root injection until A577 was introduced 2 years ago.

Whilst we cannot be sure that 'nerve root' injections performed without a diagnosis of back pain or radicular pain are performed for spinal problems, facet joint injections and epidurals certainly are. Given this, a total of 66,947 facet joint injections were performed in 2010/11 at a cost to the NHS of £570 each at 2012/13 tariff (HRG AB04Z), before applying the market forces factor (MFF). This is a total of around £38m. Similarly for the 60,742 epidural injections at £570 each, a total of £35m would be estimated. Also the 23,186 nerve root injections at £602, HRG AB03Z, would give a total of around £14m. This brings the total cost of spinal injections to around £87m.

Table 12: Spinal injections recorded for patients without a primary diagnosis of back pain or radicular pain (main diagnosis) (2010-11)

Surgery Type	Count	Consultant Speciality (Main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Facet joint	5,851	25%	1%	74%	1%	99%	
Epidural	5,022	20%	2%	78%	9%	91%	0.3%
Nerve root	13,289	11%	2%	87%	2%	98%	0.1%
Other	801	27%	11%	61%	11%	85%	4%
Total	**24,963**	**17%**	**2%**	**81%**	**3%**	**96%**	**0.2%**

(Note: FCEs. Based on primary diagnosis code. Refer to endnotes for exclusions)

The table below demonstrates the range of diagnoses recorded for these patients. The two highest codes used are generic 'pain in limb' and 'pain in joint'. M533 probably represents sacrococcygeal injections done for coccygeal pain (coccydynia).

Table 13: 'Other' diagnosis groups receiving 'spinal' injections (2010-11)

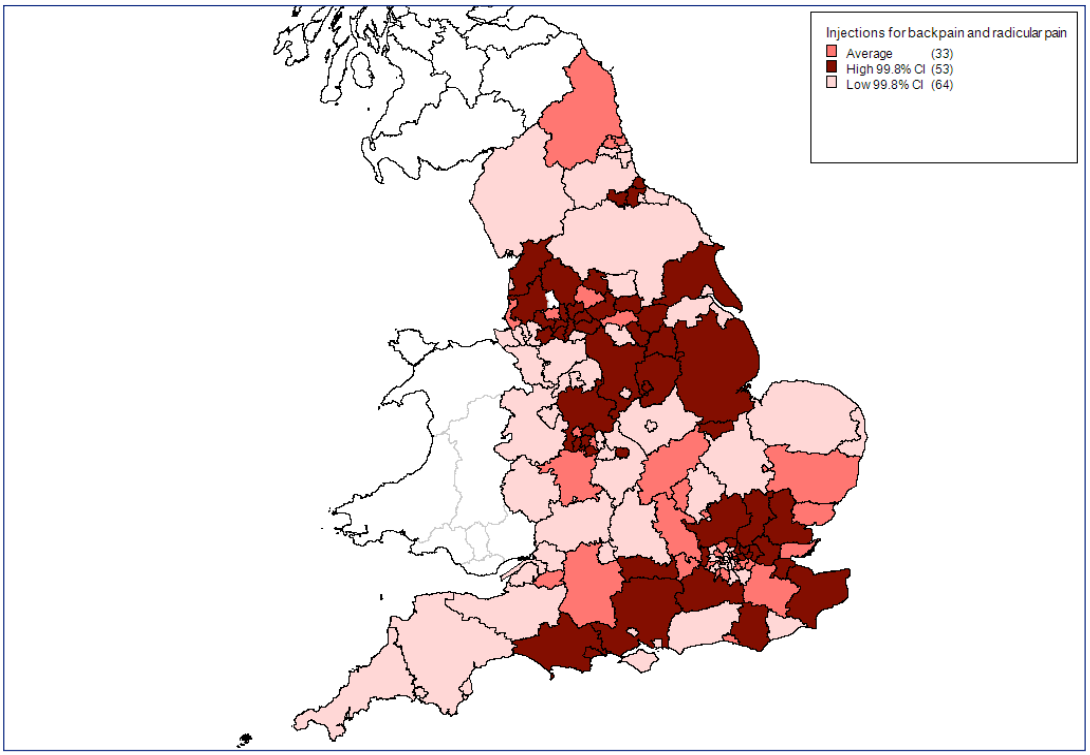
Diagnosis	Count
M796 Pain in limb	2,699
M255 Pain in joint	2,321
M533 Sacrococcygeal disorders, not elsewhere classified	1,211
M758 Other shoulder lesions	1,208
M469 Inflammatory spondylopathy, unspecified	843
R103 Pain localized to other parts of lower abdomen	773
M792 Neuralgia and neuritis, unspecified	730
R51X Headache	726
M419 Scoliosis, unspecified	723
M199 Arthrosis, unspecified	562
G560 Carpal tunnel syndrome	476
G439 Migraine, unspecified	432
R102 Pelvic and perineal pain	416

M790 Rheumatism, unspecified	404
R073 Other chest pain	329
M791 Myalgia	305
Other diagnoses (<300, n=721)	10,805
Total	**24,963**

(Note: FCEs. Based on primary diagnosis code. Refer to endnotes for further exclusions)

The map below demonstrates that considerable variation is evident in the number of spinal injections that are carried out per head of population (age standardised). The maps have been prepared using the statistical process control method. The average for the country as a whole has been compared with the result for each PCT, after controlling for differences in population size, age and gender (directly standardised using the European Standard Population). Variation is highlighted which is unlikely to be due to chance and cannot simply be explained by demographic differences between PCTs (within the confidence intervals which have been specified). A variety of other factors could explain this variation e.g. differences in data management and coding, differences in case-mix (other than age and gender), differences in service structures etc. (for further detail see Mohammed et al 2004).

Map 1: Spinal injections carried out for back pain and radicular pain (age standardised)



It is important to note that many injections are likely to be carried out in an outpatient setting, and because of the issues associated with identifying diagnosis codes and procedure codes in the outpatient dataset, these injections are not included within this report. There is concern that capturing outpatient events such as injections and producing a tariff for them may result in an increase in the number of these procedures being performed.

v. PATIENTS WITH BACK PAIN/ RADICULAR PAIN – SURGICAL INTERVENTIONS

In 2010/11, there were around 32,241 episodes with surgery recorded for patients with a primary diagnosis of back pain or radicular pain. The vast majority of these related to non-specialist surgery (73%). For the non-specialist surgery, almost all were recorded as elective admissions (92%) and over half were under the care of an orthopaedic surgeon (58%).

The table below shows the consultant speciality for various types of procedure involving decompressions, fusions, disc replacements and flexible stabilisation for the lumbar and cervical spine. The first columns relate to patients with a diagnosis of back or radicular pain. It is evident that the vast majority of these cases were under the care of a spinal orthopaedic surgeon (53%), with the remainder mainly under the care of a neurosurgeon. The final column gives details of the number of procedures carried out for all diagnosis codes (not just back pain/ radicular pain).

Table 14: Patients with back pain/ radicular pain - lumbar decompressions, discectomies, fusions and disc replacements– by consultant main speciality (with comparison with all diagnosis codes) (2010-11). For patients having more than one procedure, the one which would appear first in the Table is the procedure counted.

	Main specialty – Back / radicular pain			**Total - back / radicular pain diagnosis**	**'Other' diagnosis codes**	**ALL DIAGNOSIS CODES**
Surgery group	T&O	neurosurg	other			
Cervical spine: decompression +/- fusion	1,390	4,591	106	6,087	926	7,013
Cervical disc replacement	112	134	*	247	*	251
Revision lumbar fusion (+/- decompression)	285	*	*	401	200	601
Primary posterior lumbar fusion (+/- decompression)	3,106	815	49	3,970	1338	5,308
Anterior lumbar fusion (+/- decompression)	292	100	15	407	53	460
Lumbar decompression discectomies (without fusion)	10,823	8,516	777	20,116	1973	22,089
Revision lumbar decompression	924	951	43	1,918	153	2,071
Lumbar disc replacement	72	16	*	88	*	92
Flexible stabilisation	89	*	*	96	36	132
Interspinous process distraction devices	244	*	*	321	36	357

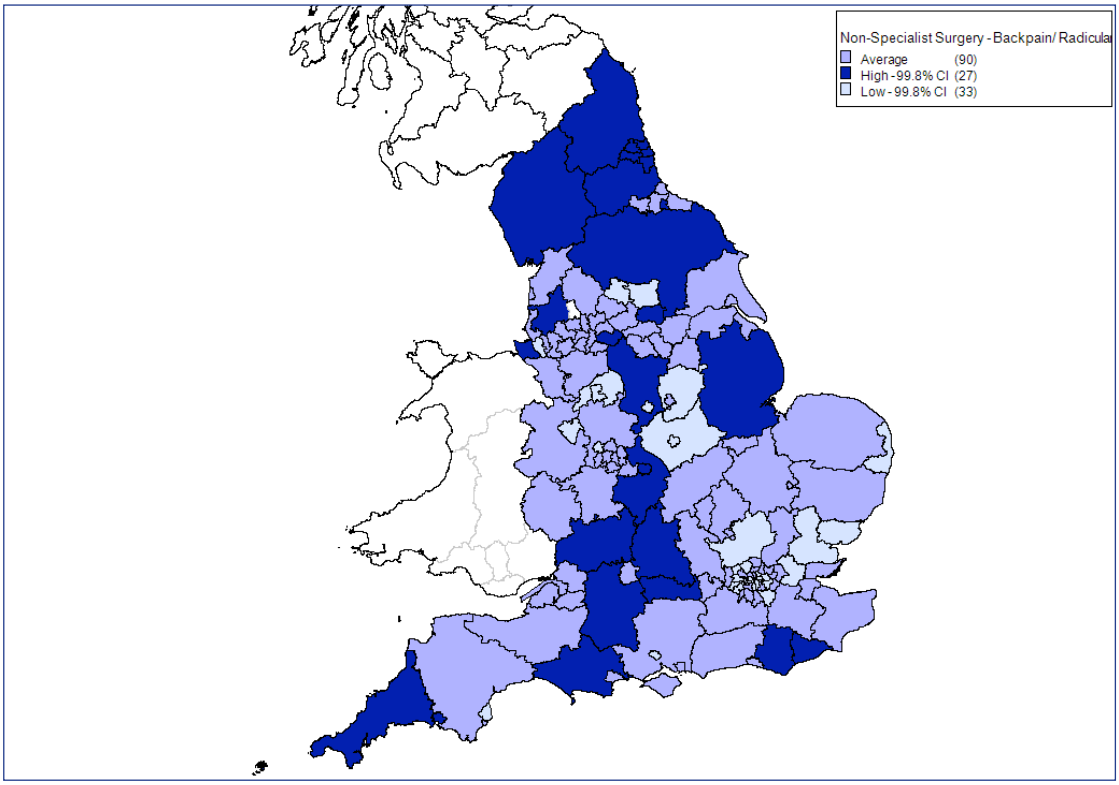
Misc	599	446	129	1,174	3235	4,409
Total	**17,936**	**15,761**	**1,128**	**34,825**	**7958**	**42,783**

(Note: FCEs. Based on primary diagnosis code & ALL procedure codes. Allocated to group based on order in table. Refer to endnotes for exclusions. See endnotes for details of codes for surgery groups)

The final columns indicate that there were around 8,000 episodes that involved these procedures, where the patients did not have a primary diagnosis relating to back or radicular pain. The main areas where a high number of 'other' diagnosis codes are found relate to lumbar decompressions / discectomies and primary lumbar fusions. Over half of the 'other' diagnosis codes recorded for lumbar decompressions relate to spinal infection (877 FCEs) or tumours (270 FCEs). Of the remaining episodes the highest number relate to 'Unknown and unspecified causes of morbidity' (R69X, 76 FCEs), Other bursal cyst (M713, 50 FCEs) and Essential (primary) hypertension (I10X, 32 FCEs). In relation to primary lumbar fusion, around 30% relate to tumours or infection (400 FCEs). The remaining procedures mainly relate to Kyphosis / scoliosis (M401-2, M410-M419, 471 FCEs), or fracture of lumbar or thoracic vertebrae (S320, S327 138 FCEs).

The map below shows the number of non-specialist surgical interventions that are carried out per head of population (age standardised). Variation is highlighted which is unlikely to be due to chance and cannot simply be explained by demographic differences between PCTs (within the confidence intervals which have been specified). Further investigation would be needed to identify the factors contributing to this variation.

Map 2: Non-specialist surgical procedures carried out for back pain and radicular pain (age standardised)



The following sections analyse the procedures carried out in relation to back pain / radicular pain in more detail. Focussing initially on surgical interventions involving cervical decompressions, fusions and disc replacements, the table below demonstrates that the highest number of procedures involved primary anterior decompressions and fusions, and the majority of all cases were under the care of a neurosurgeon (74%).

Table 15: Patients with back pain/ radicular pain - cervical decompressions, fusions & disc replacements, by consultant main speciality and numbers of providers (2010-11)

Surgery Type	Count	Consultant speciality (main)		
		T&O	Neuro	Other
Cervical spine: primary decompressions / fusions without cervical disc replacement	5,638	1,180	4,353	105
Cervical spine: primary decompressions / fusions with cervical disc replacement	449	210	238	1
Cervical spine: cervical disc replacement ONLY	247	112	134	1

(Note: FCEs. Based on primary diagnosis code and ALL procedure codes.Refer to endnotes for exclusions)

There are various OPCS codes that are used to indicate that a cervical fusion / decompression has been carried out. The table below gives details of the primary procedure code which is indicated for cervical decompressions / fusions with and without disc replacements. Single level cervical decompressions / fusions tariff to HC03 paying £4961 (excluding MFF) in 2012/13. Two-level or greater cervical decompressions / fusions and single level cervical disc replacements tariff to HC02 paying £5806 (excluding MFF) in 2012/13. Some procedures are eligible for specialised services top-up of 32% in 2012/13 if performed in a Trust designated as 'specialised' (33 Trusts). These are indicated in Table 16. With some procedures attracting top-up and others not and some Trusts attracting this payment whilst others doing similar work do not, it emphasises the need to reassess the Spinal Specialised Services National Definition Set.

Table 16: Patients with back pain/ radicular pain - cervical decompressions, fusions +/-cervical disc replacement – main procedure codes (2010-11)

OPCS code	Total	Top-up payment
V294 Primary anterior excision of cervical intervertebral disc and interbody fusion of joint of cervical spine	2271	N
V221 Primary anterior decompression of cervical spinal cord and fusion of joint of cervical spine	1244	N
V228 Other specified primary decompression operations on cervical spine	585	N
V223 Primary foraminotomy of cervical spine	512	Y
V295 Primary anterior excision of cervical intervertebral disc nec	363	N

V291 Primary laminectomy excision of cervical intervertebral disc	295	Y
V222 Primary anterior decompression of cervical spinal cord nec	207	Y
V361 Prosthetic replacement of cervical intervertebral disc	141	Y
Other / secondary opcs codes	469	
Total	**6087**	

(Refer to endnotes for exclusions)

The table below shows the providers involved in carrying out these procedures, along with the median length of stay. The procedures were overwhelmingly carried out as an ordinary admission.

Table 17: Patients with back pain/ radicular pain - cervical decompressions, fusions – +/-cervical disc replacement – provider and length of stay for elective admissions (2010-11)

SCG	Provider	Total	Median length of stay
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	260	1
NE	**South Tees Hospitals NHS Foundation Trust**	143	2
NE	**North Tees And Hartlepool NHS Foundation Trust**	106	1
NW	**Salford Royal NHS Foundation Trust**	347	2
NW	**Lancashire Teaching Hospitals NHS Foundation Trust**	248	3
NW	**The Walton Centre NHS Foundation Trust**	227	2
YH	**Sheffield Teaching Hospitals NHS Foundation Trust**	269	1
YH	**Leeds Teaching Hospitals NHS Trust**	187	2
YH	**Hull And East Yorkshire Hospitals NHS Trust**	176	2
EM	**Nottingham University Hospitals NHS Trust**	119	4
WM	**University Hospitals Birmingham NHS Foundation Trust**	212	2
WM	**University Hospitals Coventry And Warwickshire NHS Trust**	191	3
EE	**Cambridge University Hospitals NHS Foundation Trust**	147	1
LON	**St George's Healthcare NHS Trust**	186	2

LON	**King's College Hospital NHS Foundation Trust**	163	3
LON	**University College London Hospitals NHS Foundation Trust**	155	4
LON	**Barts And The London NHS Trust**	102	2
LON	**Imperial College Healthcare NHS Trust**	100	2
SC	**Oxford University Hospitals NHS Trust**	247	2
SC	**University Hospital Southampton NHS Foundation Trust**	124	2
SW	**North Bristol NHS Trust**	210	2
SW	**Plymouth Hospitals NHS Trust**	130	1
	Others <100 FCEs (n=70)	1358	2
	Total	**5407**	**2**

(Note: Excludes FCEs with no LOS data and non-elective episodes).

Turning now to interventions involving the lumbar spine, just under 4,000 procedures were undertaken involving *primary posterior lumbar fusions* (with or without decompression) where back pain or radicular pain was indicated, with just under 5,000 recorded for all diagnosis codes. The table below demonstrates the range of providers involved in carrying out such fusions and the associated length of stay. The tariff for these procedures varies according to the number of levels fused and any additional procedures. An estimate of £7500 per case based on 2012/13 tariff (excluding MFF) is probably reasonable. Based on 3,900 procedures done for back / radicular pain this would be a total of approximately £29m.

Table 18: Patients with back pain/ radicular pain - primary posterior lumbar fusions (with or without decompression), by provider with length of stay (2010-11)

SCG	Provider	Total (all diagnosis codes)	Total back / radicular pain	Median length of stay back / radicular pain
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	138	102	4
NE	**South Tees Hospitals NHS Foundation Trust**	92	79	4
NE	**North Tees And Hartlepool NHS Foundation Trust**	72	71	2
NW	**Salford Royal NHS Foundation Trust**	111	80	4
NW	**Lancashire Teaching Hospitals NHS Foundation Trust**	68	60	5.5

YH	**Leeds Teaching Hospitals NHS Trust**	136	95	7
YH	**Sheffield Teaching Hospitals NHS Foundation Trust**	115	95	4
YH	**Spire Healthcare**	71	66	4
EM	**Nottingham University Hospitals NHS Trust**	179	128	5
WM	**The Royal Orthopaedic Hospital NHS Foundation Trust**	146	112	7
WM	**University Hospitals Birmingham NHS Foundation Trust**	80	73	4
WM	**University Hospital Of North Staffordshire NHS Trust**	74	39	4
WM	**Robert Jones And Agnes Hunt Orthopaedic And District Hospital NHS Trust**	63	48	5.5
EE	**Ipswich Hospital NHS Trust**	70	67	4
LON	**Royal National Orthopaedic Hospital NHS Trust**	213	73	9
LON	**Guy's And St Thomas' NHS Foundation Trust**	111	75	5
LON	**King's College Hospital NHS Foundation Trust**	87	82	6
LON	**Epsom And St Helier University Hospitals NHS Trust**	72	71	4
SC	**Royal Berkshire NHS Foundation Trust**	106	99	4
SC	**Southampton University Hospitals NHS Trust**	88	68	3.5
SC	**Nuffield Orthopaedic Centre NHS Trust**	82	47	4
SW	**North Bristol NHS Trust**	215	163	4
SW	**Plymouth Hospitals NHS Trust**	104	95	4
SW	**Dorset County Hospital NHS Foundation Trust**	93	90	4
SW	**Taunton And Somerset NHS Foundation Trust**	90	55	5
SW	**Royal Devon And Exeter NHS Foundation Trust**	86	76	4
SW	**Salisbury NHS Foundation Trust**	61	58	4
	Other Providers <60 FCEs (n=101)	1940	1733	4
	Total	**4763**	**3900**	**4**

(Note: FCEs. Based on primary diagnosis code & ALL procedure codes .FCEs with Emergency/ other mode of admission & no length of stay information are excluded. Refer to endnotes for further exclusions)

A higher number of decompressions/discectomies were carried out for back/radicular pain, where no fusion was indicated. Several OPCS codes can be used to indicate that a decompression/discectomy was undertaken. The table below demonstrates the main codes used to indicate the primary and secondary procedures.

Table 19: Patients with back pain/radicular pain - lumbar decompression discectomies (without fusion), primary and secondary procedure codes (5 main codes) (2010-11). V551 = one level of the spine, V552 = two levels, V553 = more than 2 levels

Main procedure	Second procedure	FCE count
V337 Primary microdiscectomy of lumbar intervertebral disc	V551	4131
	V552	223
	Blank	70
	Y535	63
	Y534	19
	Other	111
V255 Primary posterior decompression of lumbar spinal cord nec	V551	2777
	V552	916
	V553	270
	Y535	85
	V331	22
	Other	106
V254 Primary posterior laminectomy decompression of lumbar spinal cord	V551	2109
	V552	942
	V553	287
	(blank)	79
	Y535	58
	Other	101
V259 Unspecified primary decompression operations on lumbar spine	V551	802
	V552	244
	V553	58
	Y535	18
	(blank)	17
	Other	86

V332 Primary fenestration excision of lumbar intervertebral disc	V551	879
	V552	83
	Y535	11
	Other	36

The table below illustrates the providers involved in carrying out decompressions/discectomies alongside the proportion carried out as a day case and the median length of stay. It is evident that there are variations in median length of stay and the level of admissions as day cases. Again, the tariff for these procedures varies depending on the number of levels performed but most would be HC04 at £3,284 per procedure. Including emergency admissions, a total of 20,116 are performed for back/radicular pain making a total cost of around £66m.

The OPCS codes available for these procedures, as for a number of spinal procedures, exceed the number required to describe these procedures clinically and rationalisation is recommended. Due to the high volume and cost of these procedures, a best practice tariff (BPT) based on length of stay could be evaluated.

Table 20: Patients with back pain/radicular pain - lumbar decompression discectomies (without fusion), provider and length of stay (elective admissions) (2010-11)

SCG	Provider	FEC count	% Day cases	Median length of stayback pain / radicular pain
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	627	7%	1
NE	**South Tees Hospitals NHS Foundation Trust**	465	6%	2
NW	**Salford Royal NHS Foundation Trust**	872	2%	1
NW	**The Walton Centre NHS Foundation Trust**	656	0%	2
NW	**Lancashire Teaching Hospitals NHS Foundation Trust**	572	0%	3
YH	**Sheffield Teaching Hospitals NHS Foundation Trust**	441	0%	1
YH	**Hull And East Yorkshire Hospitals NHS Trust**	417	0%	2
YH	**Leeds Teaching Hospitals NHS Trust**	319	1%	2
YH	**Mid Yorkshire Hospitals NHS Trust**	251	58%	0
EM	**Derby Hospitals NHS Foundation Trust**	372	0%	1
EM	**Nottingham University Hospitals NHS Trust**	354	2%	2

WM	**University Hospitals Coventry And Warwickshire NHS Trust**	502	0%	2
WM	**The Royal Orthopaedic Hospital NHS Foundation Trust**	383	17%	2
WM	**University Hospitals Birmingham NHS Foundation Trust**	381	1%	2
WM	**Robert Jones And Agnes Hunt Orthopaedic And District Hospital NHS Trust**	239	0%	3
EE	**Cambridge University Hospitals NHS Foundation Trust**	396	1%	1
LON	**St George's Healthcare NHS Trust**	263	0%	3
LON	**University College London Hospitals NHS Foundation Trust**	256	0%	4
LON	**King's College Hospital NHS Foundation Trust**	241	0%	3
LON	**Imperial College Healthcare NHS Trust**	230	3%	2
SEC	**East Sussex Hospitals NHS Trust**	411	64%	0
SW	**Plymouth Hospitals NHS Trust**	449	0%	1
SW	**North Bristol NHS Trust**	387	14%	1
	Other <200 FCEs (n=194)	8,872	5%	2
	Total	**18,356**	**6%**	**2**

(Note: FCEs. Based on primary diagnosis code & ALL procedure codes. Excludes emergency admissions. LOS analysis excludes FCEs with no information on spell length. Refer to endnotes for exclusions)

Looking now at flexible stabilisation, the table below demonstrates that a high number are carried out alongside other surgical interventions, mainly with lumbar decompression / discectomy.

Table 21: Patients with back pain/ radicular pain – flexible stabilisation procedures (2010-11)

Type of surgery – V401 combined with	FEC count
Lumbar primary decompressions and discectomies	304
Flexible stabilisation only	96
Primary lumbar fusion (+/- decompression)	79
Revision lumbar decompression	30
Anterior lumbar fusion	*
Revision lumbar fusion	*
Grand Total	**516**

(Elective admissions only, Refer to endnotes for exclusions)

The table below gives details of the 10 main hospitals with flexible stabilisation recorded – (including flexible stabilisation carried out along other procedures). It is recommended that flexible stabilisation should not escalate the HRG resulting in increased payment as a two level posterior instrumented fusion currently pays less than a one level instrumented fusion and one level flexible stabilisation. It is noted that none of the larger spinal centres were performing these operations, at scale. It would be recommended that Trusts performing these procedures should audit outcomes in terms of patient reported outcome measures to establish whether these procedures are cost-effective.

Table 22: Patients with back pain/ radicular pain – flexible stabilisation procedures, by provider (2010-11)

SCG	Provider	FEC Count
NE	**North Tees and Hartlepool NHS Foundation Trust**	126
NW	**Stockport NHS Foundation Trust**	77
NW	**Warrington and Halton Hospitals NHS Foundation Trust**	17
WM	**University Hospitals Coventry and Warwickshire NHS Trust**	16
LON	**Croydon Health Services NHS Trust**	15
LON	**Epsom and St Helier University Hospitals NHS Trust**	14
SEC	**East Kent Hospitals University NHS Foundation Trust**	58
SEC	**East Sussex Hospitals NHS Trust**	51
SW	**Gloucestershire Hospitals NHS Foundation Trust**	21

	Other Private Healthcare Providers	11
	Other	110
	Total	**516**

(Refer to endnotes for exclusions)

Finally, the table below illustrates the number of interspinous process distraction devices which were recorded and the procedures they are being combined with. The cases where devices were recorded alongside cervical decompressions/fusions are? were? mainly related to a recording issue in one Trust which has now been resolved.

Table 23: Patients with back pain/ radicular pain – interspinous process distraction devices, combinations of procedures (2010-11)

Type of surgery – interspinous process distraction devices combined with	FEC count
Lumbar primary decompressions and discectomies	371
Interspinous process distraction devices only	321
Cervical decompression / fusion	57
Revision lumbar decompression	45
Primary lumbar fusion	39
Flexible stabilisation	25
Revision lumbar fusion	*
Anterior lumbar fusion / decompression	*
Total	**864**

(Refer to endnotes for exclusions)

The trusts carrying out the highest number of procedures involving interspinous process distraction devices are given in the table below. Those cases which involved cervical procedures have been removed, as this is likely to be a recording issue.

It is recommended that interspinous process distraction devices do not escalate the HRG resulting in increased payment. It is noted none of the larger spinal centres were performing these operations, at scale. It would be recommended that Trusts performing these procedures should audit outcomes in terms of patient reported outcome measures to establish whether these procedures are cost-effective.

Table 24: Patients with back pain/ radicular pain – interspinous process distraction devices, by provider (2010-11)

SCG	Provider	FEC Count
WM	**University Hospitals Coventry and Warwickshire NHS Trust**	42
EE	**Colchester Hospital University NHS Foundation Trust**	54
EE	**Mid Essex Hospital Services NHS Trust**	21
LON	**Barts and The London NHS Trust**	28
LON	**Croydon Health Services NHS Trust**	20
SEC	**East Kent Hospitals University NHS Foundation Trust**	74
SEC	**Sussex Orthopaedic NHS Treatment Centre**	35
SEC	**Frimley Park Hospital NHS Foundation Trust**	30
SW	**Dorset County Hospital NHS Foundation Trust**	33
SW	**Plymouth Hospitals NHS Trust**	26
SW	**Salisbury NHS Foundation Trust**	20
	Hinchingbrooke Health Care NHS Trust	21
	Other Private Healthcare Providers	31
	Others <20FCEs (n=68)	372
	Total	**807**

(Note: FCEs. Based on primary diagnosis code & ALL procedure codes. Refer to endnotes for exclusions)

It is worth noting that a further 40 disc replacements were carried out in combination with other procedures, mainly primary lumbar fusions.

vi. PATIENTS WITH BACK PAIN / RADICULAR PAIN – CHILDREN'S SERVICES

There were around 136 FCEs relating to surgical procedures where the patient was aged under 18, with a diagnosis of back pain/radicular pain. In addition, 130 FCEs were identified which related to injections and 1,524 admissions where no procedure was undertaken.

B) Cauda Equina Syndrome (Potentially serious pathology)

i. DEFINITION OF PATIENT GROUP

There is just one ICD10 diagnosis code that relates to Cauda Equina syndrome (CES, G83.4). For the purposes of this analysis, cases have been included where this code is used in any of the diagnosis fields (primary and secondary). Clinicians recognised two types of CES – impending and complete. Impending CES refers to patients with mild or intermittent bladder and /or bowel symptoms consistent with CES and compression of the Cauda Equina on imaging. A large number of patients are also admitted with possible CES and this may explain some of the findings below. A further possible diagnosis code – S343 Injury to Cauda Equina- was also examined, however this only accounted for 20 FCEs in 2010-11 and so was not included in the analysis.

ii. PATIENTS WITH CES - GENERAL OVERVIEW OF ACTIVITY

For this group of patients the main admission method was as an emergency (65%), however some elective activity was recorded (these may represent urgent operations done in patients with impending CES). Patients who received a surgical procedure were likely to be under the care of an orthopaedic consultant or neurosurgeon.

Table 25: Patients with a diagnosis of Cauda Equina Syndrome – admission method and main speciality of consultant (2010-11)

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	134	49%	43%	7%	49%	36%	16%
Non-Specialist Surgery	833	37%	60%	3%	65%	17%	19%
Intradural Specialist Surgery	14	14%	71%	14%	57%	29%	14%
Pain & Neuro Modulation	17	12%	0%	88%	0%	100%	0%
Non-Specialist Non-Surgical procedures	88	33%	2%	65%	17%	82%	1%
Non-spinal procedure only	1419	16%	3%	81%	61%	33%	6%
No procedure recorded	905	18%	7%	75%	79%	9%	12%

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

It is evident from the table above that some injections were recorded. This would be an unlikely form of treatment for patients with either impending or complete CES. It is probable that these were patients who were initially suspected to have CES, and who subsequently went on to have injections for nerve root pain, once CES had been ruled out. A few are likely to be oncological treatments for Cauda Equina Syndrome due to metastatic compression. The majority of the injections recorded related to epidurals (around 59%) and half of these patients were under the care of an anaesthetist (50%). Similarly, the 905 FCEs where no procedure was recorded are likely to relate to suspected cases of Cauda Equina Syndrome, rather than confirmed cases.

The non-spinal procedures recorded mainly related to diagnostic tests (42%) and miscellaneous operations (14%). The miscellaneous operations included continuous intravenous infusion of therapeutic substance NEC (X29.2) and delivery of a fraction of external beam radiotherapy NEC (X65.4). This is likely to represent patients with metastatic Cauda Equina compression treated with chemotherapy and radiotherapy.

iii. PATIENTS WITH CES – SURGICAL INTERVENTIONS

The main operative procedures recorded for this group of patients were discectomies and decompressions, as is shown in the table below. The majority of surgical procedures were carried out under the care of a neurosurgeon (57% overall).

Table 26: Surgical procedures for patients with a diagnosis of CES (groups of procedures) (2010-11)

Surgery Type	Count	Consultant Speciality (Main)		
		T&O	Neuro	Other
Lumber decompression / discectomy	791	36%	61%	3%
Revision lumbar decompression / discectomy	36	42%	58%	0%
Fusion (suspected) and lumbar decompression / discectomy	21	71%	29%	0%
Other	133	47%	41%	12%
Total	**981**	**39%**	**57%**	**4%**

(Refer to endnotes for exclusions)

The table below sets out the detail of the surgical procedures involved and again emphasises the many different OPCS codes which can be used to describe a lumbar spine decompression / discectomy.

Table 27: Surgical procedures for patients with a diagnosis of CES (2010-11)

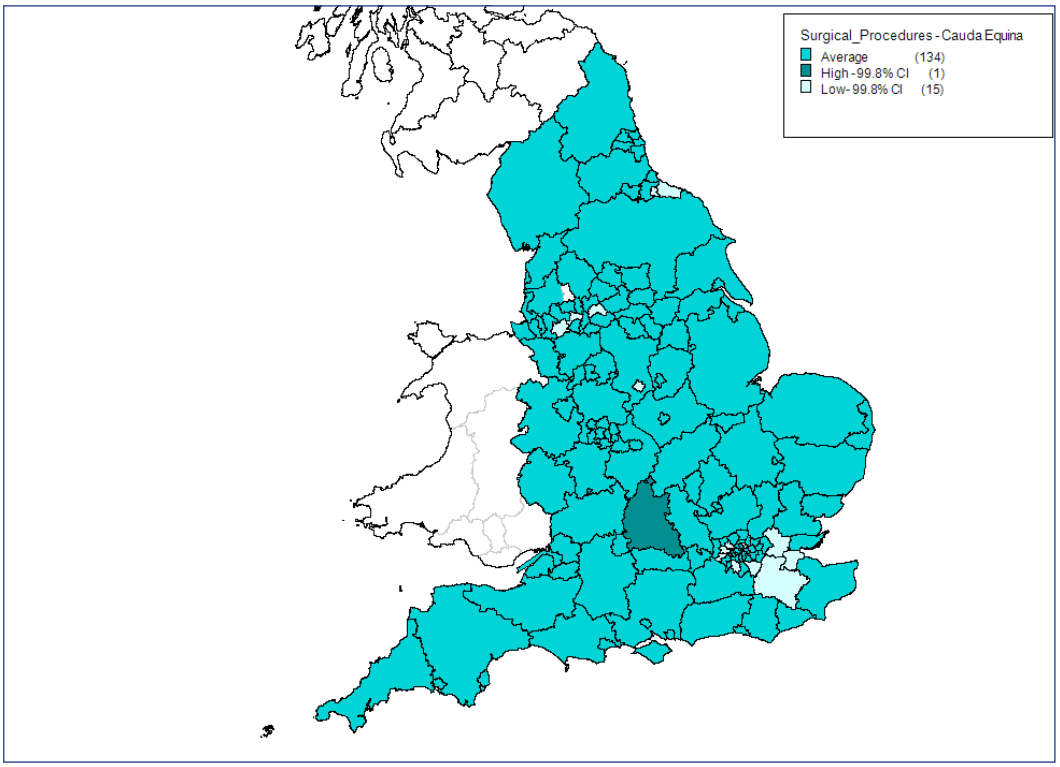
Surgery Type	Count	Consultant Speciality (Main)		
		T&O	Neuro	Other
V254 Primary posterior laminectomy decompression of lumbar spinal cord	204	31%	65%	4%
V337 Primary microdiscectomy of lumbar intervertebral disc	160	22%	76%	3%
V255 Primary posterior decompression of lumbar spinal cord nec	147	61%	37%	1%
V331 Primary laminectomy excision of lumbar intervertebral disc	121	12%	83%	5%
V332 Primary fenestration excision of lumbar intervertebral disc	32	31%	69%	0%

V339 Unspecified primary excision of lumbar intervertebral disc	31	65%	35%	0%
V338 Other specified primary excision of lumbar intervertebral disc	30	50%	50%	0%
V259 Unspecified primary decompression operations on lumbar spine	24	67%	21%	13%
V672 Primary hemilaminectomy decompression of lumbar spine	13	69%	31%	0%
V258 Other specified primary decompression operations on lumbar spine	12	50%	50%	0%
V265 Revisional posterior decompression of lumbar spinal cord nec	10	70%	30%	0%
V264 Revisional posterior laminectomy decompression of lumbar spinal cord	10	30%	70%	0%
V252 Primary extended decompression of lumbar spinal cord nec	9	67%	33%	0%
V473 Biopsy of lumbar vertebra	9	44%	22%	33%
V347 Revisional microdiscectomy of lumbar intervertebral disc	8	50%	50%	0%
V256 Primary lateral foraminotomy of lumbar spine	8	25%	75%	0%
V341 Revisional laminectomy excision of lumbar intervertebral disc	8	13%	88%	0%
V334 Primary anterior excision of lumbar intervertebral disc nec	8	75%	25%	0%
V253 Primary posterior decompression of lumbar spinal cord and intertransverse fusion of joint of lumbar spine	7	71%	29%	0%
V411 Posterior attachment of correctional instrument to spine	7	86%	14%	0%
V242 Primary decompression of thoracic spinal cord nec	7	57%	43%	0%
Other <6 (n=64)	116	45%	44%	11%
Total	**981**	**39%**	**57%**	**4%**

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

There is little geographical variation in the number of surgical procedures carried out for CES, as is shown in the map below. The map demonstrates that most of the variation in the number of CES surgical procedures can be explained in terms of demographic factors.

Map 3: Surgical procedures carried out for CES (age standardised)



The table below highlights which providers were involved in carrying out high numbers of procedures involving CES. The median length of stay has not been included as this varies according to the procedure being undertaken, with longer median lengths of stay associated with laminectomies.

Table 28: Surgical procedures for patients with CES (2010-11)

SCG	Provider	FCE count
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	29
NW	**Lancashire Teaching Hospitals NHS Foundation Trust**	40
NW	**The Walton Centre NHS Foundation Trust**	30
NW	**Salford Royal NHS Foundation Trust**	30
YH	**Leeds Teaching Hospitals NHS Trust**	52
YH	**Hull and East Yorkshire Hospitals NHS Trust**	27
YH	**Sheffield Teaching Hospitals NHS Foundation Trust**	26
EM	**Nottingham University Hospitals NHS Trust**	46

EM	**University Hospitals Of Leicester NHS Trust**	23
WM	**University Hospitals Birmingham NHS Foundation Trust**	53
WM	**University Hospitals Coventry and Warwickshire NHS Trust**	32
WM	**University Hospital Of North Staffordshire NHS Trust**	17
WM	**Robert Jones and Agnes Hunt Orthopaedic and District Hospital NHS Trust**	10
EE	**Cambridge University Hospitals NHS Foundation Trust**	18
EE	**Norfolk and Norwich University Hospitals NHS Foundation Trust**	10
LON	**St George's Healthcare NHS Trust**	42
LON	**University College London Hospitals NHS Foundation Trust**	27
LON	**King's College Hospital NHS Foundation Trust**	22
LON	**Barking, Havering and Redbridge University Hospitals NHS Trust**	20
LON	**Imperial College Healthcare NHS Trust**	17
LON	**Royal Free Hampstead NHS Trust**	17
LON	**Barts and The London NHS Trust**	13
SEC	**Brighton and Sussex University Hospitals NHS Trust**	14
SC	**Southampton University Hospitals NHS Trust**	43
SC	**Oxford Radcliffe Hospitals NHS Trust**	28
SC	**Nuffield Orthopaedic Centre NHS Trust**	25
SW	**North Bristol NHS Trust**	38
SW	**Plymouth Hospitals NHS Trust**	21
SW	**Dorset County Hospital NHS Foundation Trust**	14
	Other	197
	Total	**981**

(Note: FCEs. Based ALL diagnosis codes. All patents with procedures relating to extradural, intradural and non-specialist surgery. Refer to endnotes for exclusions)

IV. PATIENTS WITH CES – CHILDREN'S SERVICES

There were only a few patients aged under 18 with a diagnosis of CES, who received a spinal procedure.

C) Spinal tumours including metastases (potentially serious pathology)

i. DEFINITION OF PATIENT GROUP

Cancer of the spine includes primary malignant tumours of osseo-ligamentous and neurological origin, benign tumours and tumours of unknown / uncertain behaviour, alongside metastases to the spine. Primary tumours are aligned to ICD10 diagnosis codes, however, secondary tumours and metastatic disease can be more difficult to identify. For the purposes of this report, metastatic disease has been identified as all cases with a diagnosis of a malignant neoplasm, in any position in the diagnosis codes, where spinal procedures are recorded (see table below). The results are presented in separate sections, however, it is acknowledged that in reality there will be some overlap, and some tumours recorded as malignant may well be benign and vice versa.

Table 29: Definition of spinal tumour diagnosis codes included - if accompanied by a surgical procedure code relating to the spine

Diagnosis	ICD 10 Code
Primary malignant tumours of osseo-ligamentous origin	C412 Malignant neoplasm of vertebral column ; D166 Benign neoplasm of vertebral column; D480 Neoplasm uncert or unknown behaviour of bone & artic. cart.
Primary malignant tumours of neurological origin	C701 Malignant neoplasm of spinal meninges; C720 Malignant neoplasm of spinal cord; C721 Malignant neoplasm of cauda equina; D320 Benign neoplasm of cerebral meninges; D321 Benign neoplasm of spinal meninges; D329 Benign neoplasm of meninges, unspecified; D334 Benign neoplasm of spinal cord; D361 Benign neoplasm of periph nerves & autonomic nervous system; D421 Neoplasm uncert / unkn behav spinal meninges; D434 Neoplasm uncert / unkn behav spinal cord; D437 Neoplasm uncert / unkn behav oth part of central nervous sys; D439 Neoplasm uncert / unkn behav central nervous system, unsp.
Metastatic disease	All episodes with a diagnosis code of a malignant neoplasm in any of the diagnosis fields (primary and secondary).

Metastatic disease

i. PATIENTS WITH METASTATIC DISEASE –TREATED WITH SURGERY

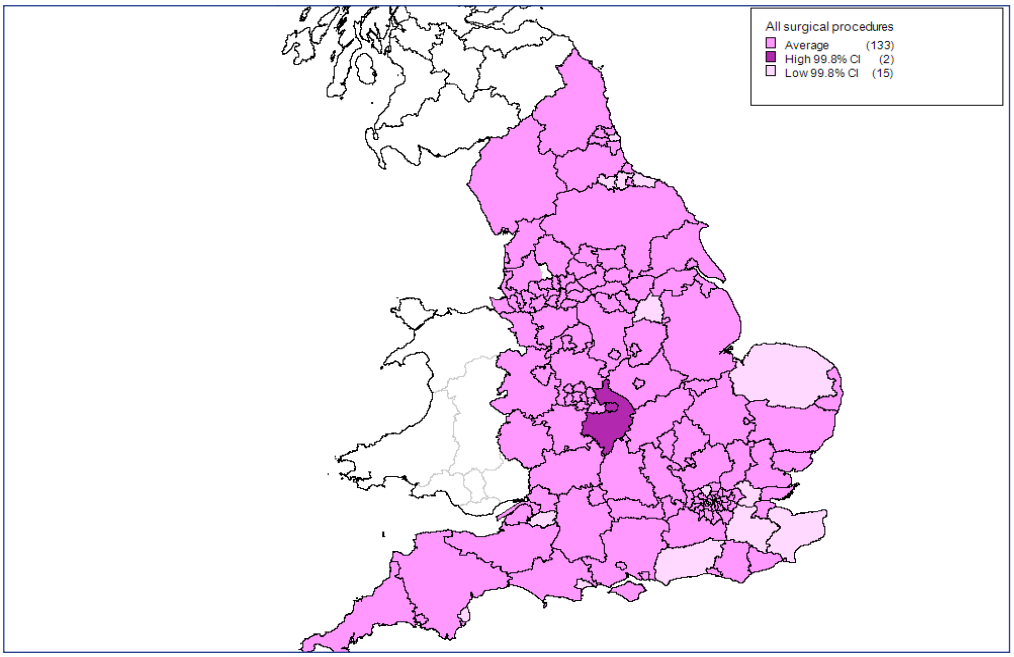
In 2010/11 there were around 2,100 FCEs which were likely to be metastatic disease treated with spinal surgery. Across all surgery groups there were a slightly higher proportion of patients with an elective mode of admission (46% across all surgery groups).

The surgical procedures carried out were mainly extradural (77% of all surgical procedures), mainly performed by an orthopaedic surgeon (45% of extradural procedures) or neurosurgeon (31% of extradural procedures, see table below). Other patients who received extradural surgery were mainly under the care of a clinical

oncology consultant (5% of all extradural procedures) or radiology consultant (4%). The highest number of procedures recorded against clinical oncology and radiology consultants related to vertebroplasty (V444, 70 FCEs) and / or biopsy of lumbar vertebra (V473, 21 FCEs). For intradural procedures, over a quarter of cases were recorded as under the care of anaesthetists (29%), with the main procedures relating to this group recorded as 'radiofrequency controlled thermal destruction of spinothalamic tract' (A472, 20 FCEs) and 'percutaneous chordotomy of spinal cord '(A473, 28 FCEs).

There is little geographical variation in the number of surgical procedures which are probably carried out for metastatic disease, as is shown in the map below. The map demonstrates that most of the variation in the number of surgical procedures likely to be associated with metastatic disease can be explained in terms of demographic factors.

Map 4: Surgical procedures carried out for metastatic disease (age standardised)



(Note: includes all surgical procedures, SSED, NS-S, SSID)

Table 30: Consultant main speciality and admission method for patients with possible Metastatic Spinal Disease (2010-11)

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	1,626	45%	31%	24%	44%	43%	13%
Non-Specialist Surgery	297	56%	32%	12%	31%	59%	10%
Intradural Specialist Surgery	187	4%	45%	51%	36%	50%	14%
Total	**2,110**	**43%**	**32%**	**25%**	**41%**	**46%**	**13%**

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

Focussing in more detail on the procedures conducted, the highest numbers of patients were treated with posterior thoracolumbar decompression and instrumentation (suspected, see table below). Patients who received these procedures were almost all under the care of an orthopaedic consultant or neurosurgeon (91% of all FCEs). Of the procedures included in the 'Other' category, the highest number related to 'percutaneous chordotomy of spinal cord' (A473, 29 FCEs) and 'radiofrequency controlled thermal destruction of spinothalamic tract' (A472, 20 FCEs).

Table 31: Procedure recorded and consultant main speciality for patients with possible Metastatic Spinal Disease (surgical interventions, recorded in any procedure position) (2010-11)

Surgery Type	Count	Consultant speciality (main)		
		T&O	Neuro	Other
Vertebral biopsy (V471, V472, V473, V478)	300	35%	15%	50%
Vertebroplasty of fracture of spine (V444)	316	34%	21%	45%
Balloon kyphoplasty of fracture of spine (V445)	162	71%	17%	12%
Posterior thoracolumbar decompression + instrumentation (suspected) (A444, V241, V242, V253, V254, V255, V408, V411, V432, V462, V468, V548)	743	52%	39%	9%
Anterior thoracolumbar decompression + instrumentation (suspected) (V244)	47	49%	49%	2%
Anterior cervical corpectomy and reconstruction (V224)	29	59%	28%	14%
Others	513	29%	43%	28%
Total	**2110**	**43%**	**32%**	**25%**

(Note: FCEs. Based on ALL diagnosis codes, grouped according to first relevant procedure recorded. Refer to endnotes for exclusions)

A range of providers were involved in carrying out thoracolumbar decompression and instrumentation (posterior approach) for patients with possible metastatic disease, as is shown in the table below.

Table 32: Posterior thoracolumbar decompression and instrumentation for patients with possible Metastatic Spinal Disease, by provider (2010-11)

SCG	Provider	Posterior thoracolumbar decompression + instrumentation (suspected)	Median length of stay
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	55	11
NW	**Lancashire Teaching Hospitals NHS Foundation Trust**	43	12

NW	**Salford Royal NHS Foundation Trust**	32	13.5
NW	**The Walton Centre NHS Foundation Trust**	21	11
NW	**University Hospitals Birmingham NHS Foundation Trust**	15	17
YH	**Leeds Teaching Hospitals NHS Trust**	35	15
YH	**Sheffield Teaching Hospitals NHS Foundation Trust**	24	13
EM	**Nottingham University Hospitals NHS Trust**	29	13
EM	**Derby Hospitals NHS Foundation Trust**	29	11
EM	**University Hospitals Of Leicester NHS Trust**	20	9
WM	**The Royal Orthopaedic Hospital NHS Foundation Trust**	38	10
WM	**University Hospital Of North Staffordshire NHS Trust**	18	24
WM	**The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust**	20	8
EE	**Cambridge University Hospitals NHS Foundation Trust**	17	9
LON	**St George's Healthcare NHS Trust**	26	11.5
LON	**King's College Hospital NHS Foundation Trust**	22	15
LON	**University College London Hospitals NHS Foundation Trust**	20	14.5
LON	**Imperial College Healthcare NHS Trust**	16	7
SC	**University Hospital Southampton NHS Foundation Trust**	17	7
SC	**Oxford University Hospitals NHS Trust**	18	13.5
SW	**North Bristol NHS Trust**	18	11.5
SW	**Plymouth Hospitals NHS Trust**	16	13
	Others <15 FCEs (n=52)	194	9
	Total	**743**	**11**

(Note: FCEs. Based on ALL diagnosis codes, grouped according to first relevant procedure recorded. Length of stay calculations exclude FCEs where no information on spell length included. Refer to endnotes for exclusions

The tables below show the providers involved in carrying out vertebroplasty and kyphoplasty procedures.

Table 33: Vertebroplasty for patients with possible Metastatic Spinal Disease, provider with length of stay (2010-11)

SCG	Provider	Count	Median length of stay
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	11	0
YH	**Leeds Teaching Hospitals NHS Trust**	20	2
YH	**Hull and East Yorkshire Hospitals NHS Trust**	18	4.5
EM	**Nottingham University Hospitals NHS Trust**	22	3.5
EM	**University Hospitals Of Leicester NHS Trust**	10	0
WM	**University Hospitals Coventry and Warwickshire NHS Trust**	51	2.5
WM	**The Royal Orthopaedic Hospital NHS Foundation Trust**	20	1.5
LON	**Imperial College Healthcare NHS Trust**	10	2
SC	**Buckinghamshire Healthcare NHS Trust**	10	0
SW	**North Bristol NHS Trust**	18	0
SW	**Royal Devon and Exeter NHS Foundation Trust**	10	0
	Other	116	1
	Total	**316**	**2**

(Note: FCEs. Based ALL diagnosis codes & ALL procedure codes. Length of stay calculations exclude FCEs where no information on spell length included. Refer to endnotes for exclusions)

Table 34: Kyphoplasty for patients with possible Metastatic Spinal Disease, by provider with length of stay (2010-11)

SCG	Provider	Count	Median length of stay
EM	**Derby Hospitals NHS Foundation Trust**	14	2
LON	**Royal National Orthopaedic Hospital NHS Trust**	23	2
LON	**St George's Healthcare NHS Trust**	12	4

	Other <10 FCEs (n= 41)	113	1.5
	Total	**162**	**2**

(Note: FCEs. Based ALL diagnosis codes & ALL procedure codes. Length of stay calculations exclude FCEs with no information on spell length recorded. Refer to endnotes for exclusions)

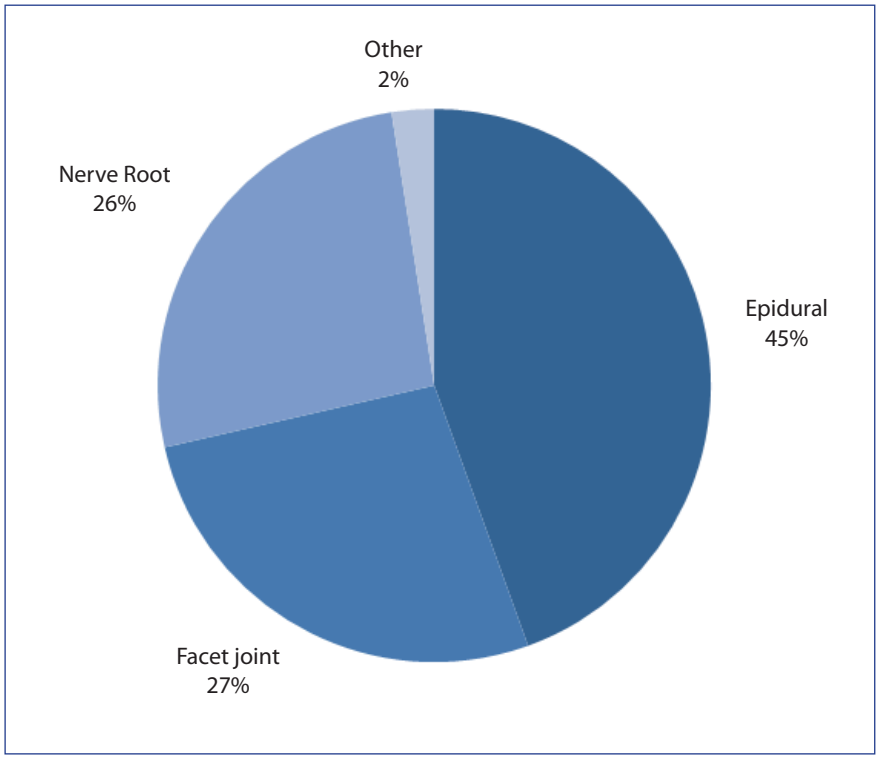
It is important to note that both vertebroplasty and kyphoplasty were carried out on a wider group of patients. In total, 423 kyphoplasty procedures and 791 vertebroplasty procedures were recorded where there was no indication that the patient had metastatic disease (this is discussed further in the section on Spinal Trauma). It is difficult to estimate what proportion of these patients were likely actually to have had metastatic spinal disease.

There were 91 Trusts where spinal biopsies were recorded for patients with possible metastatic disease. The following Trusts all had 10 or more episodes with a biopsy recorded: The Newcastle Upon Tyne Hospitals NHS Foundation Trust, The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust, Cambridge University Hospitals NHS Foundation Trust, Salford Royal NHS Foundation Trust, The Royal Orthopaedic Hospital NHS Foundation Trust.

ii. PATIENTS WITH METASTATIC SPINAL DISEASE –TREATED WITH INJECTIONS

Around 1,800 FCEs were recorded with spinal injections for patients with a neoplasm, for the vast majority, the spinal injection was recorded as the main procedure (1,497 FCEs). As is shown in the chart below, a high proportion of these related to epidural injections (45%) or facet joint injections (27%). Around half of all patients who received a spinal injection were under the care of an anaesthetist (65%). It is likely that a high proportion of these injections were for degenerative indications in patients who happen to have cancer, but some could relate to cancer treatment.

Chart 10: Procedure codes: injection procedures (NS-NS) (2010-11)



(Note: FCEs. Facet joint injections = V544, Nerve root = A577, A735, Epidural = A521-A529, other = all other spinal injection codes. Based on all diagnosis codes where injection recorded as main procedure. Refer to endnotes for further exclusions)

Tumours of neurological origin

i. PATIENTS WITH TUMOURS OF NEUROLOGICAL ORIGIN – GENERAL OVERVIEW

There were just over 600 FCEs in 2010/11 that appeared to be related to tumours of neurological origin, where a spinal surgical procedure was recorded. Although a relatively small group of patients require spinal surgery for spinal tumours of neurological origin, it is important that these procedures are considered as they are technically very difficult and the outcome probably depends on the resection margin of the tumour.

The table below shows these cases in detail, demonstrating that there were just over 500 FCEs linked with intradural surgery, which is the main form of surgery carried out for these patients. These procedures were overwhelmingly carried out by neurosurgeons and they were mainly elective admissions. Episodes relating to other kinds of procedures (e.g. injections) have not been included in this analysis as it is difficult to distinguish activity related to the spinal tumour as opposed to other, more general treatments.

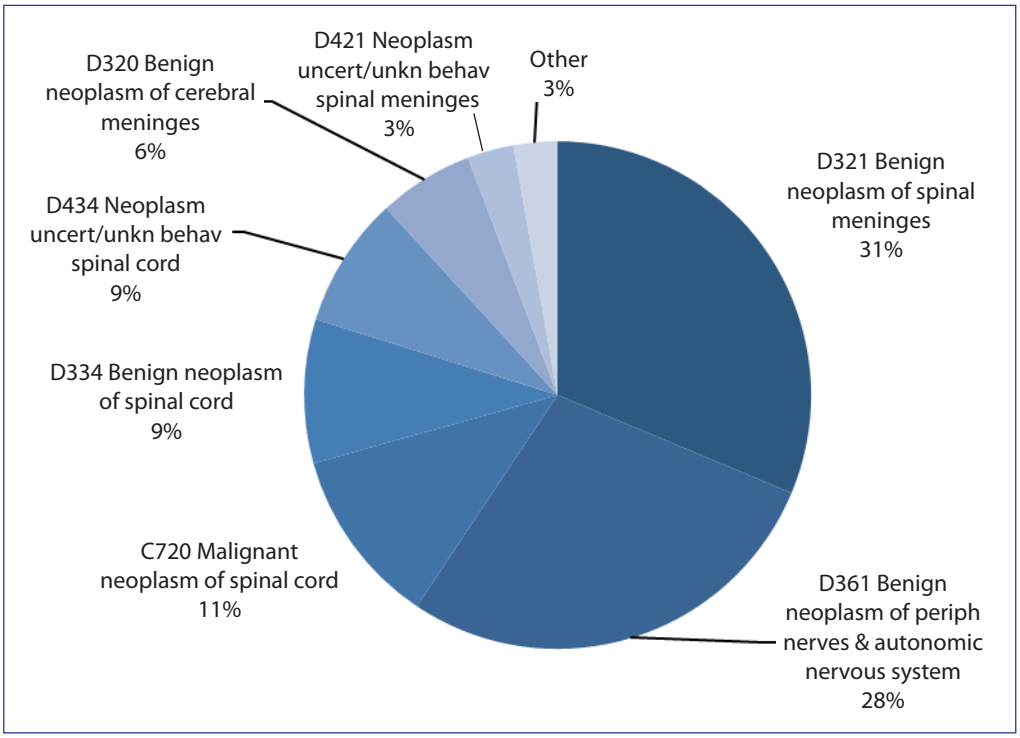
Table 35: Patients with tumours of neurological origin (Consultant Main Speciality and Admission Method)

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	84	7%	83%	10%	24%	68%	8%
Non-Specialist Surgery	19	0%	95%	5%	21%	79%	0%
Intradural Specialist Surgery	507	3%	93%	4%	19%	75%	6%
Total	**610**	**3%**	**92%**	**4%**	**20%**	**74%**	**6%**

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

The chart below shows the breakdown of diagnosis codes for FCEs relating to tumours of neurological origin where a surgical spinal procedure was recorded. It is evident that a high proportion of the FCEs related to benign tumours or tumours of unknown / uncertain origin (87%).

Chart 11: Patients with tumours of neurological origin -diagnosis codes recorded



(Note: FCEs. Based ALL diagnosis codes Refer to endnotes for exclusions)

There are a relatively small number of Trusts involved in carrying out intradural surgery for these patients as is shown in the table below.

Table 36: Trusts carrying out intradural procedures for patients with tumours of neurological origin – benign and malignant

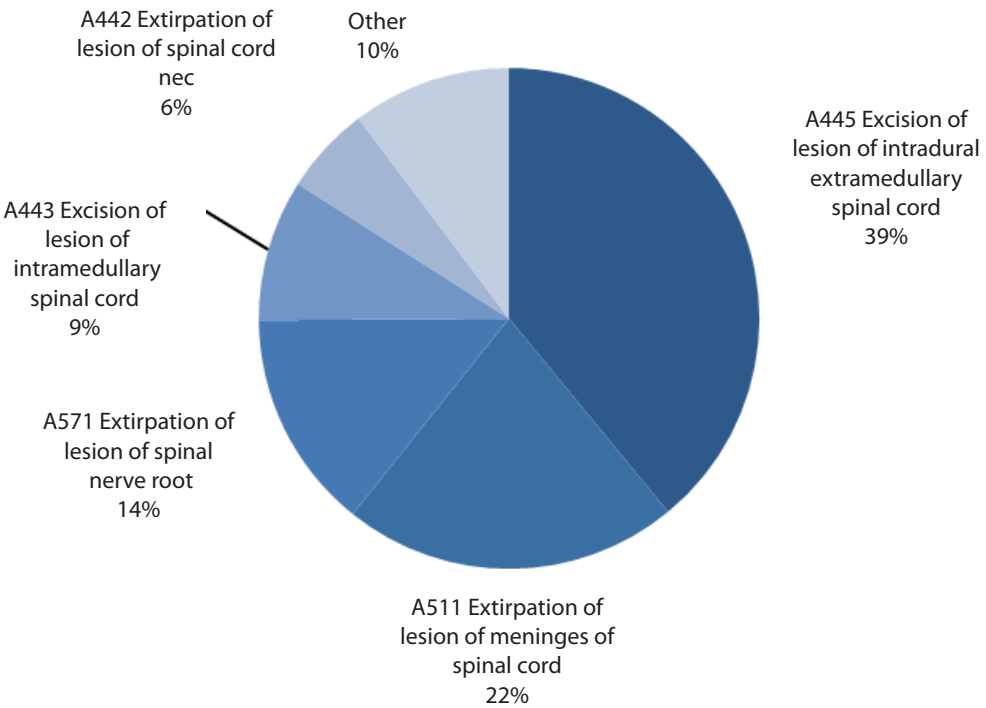
SCG	Provider	Count
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	18
NE	**South Tees Hospitals NHS Foundation Trust**	15
NW	**The Walton Centre NHS Foundation Trust**	39
NW	**Salford Royal NHS Foundation Trust**	19
NW	**Lancashire Teaching Hospitals NHS Foundation Trust**	18
YH	**Leeds Teaching Hospitals NHS Trust**	28
YH	**Sheffield Teaching Hospitals NHS Foundation Trust**	26
EM	**Nottingham University Hospitals NHS Trust**	22
EE	**Cambridge University Hospitals NHS Foundation Trust**	28

LON	**University College London Hospitals NHS Foundation Trust**	30
LON	**St George's Healthcare NHS Trust**	20
LON	**King's College Hospital NHS Foundation Trust**	18
LON	**Barking, Havering and Redbridge University Hospitals NHS Trust**	16
SC	**University Hospital Southampton NHS Foundation Trust**	32
SC	**Oxford University Hospitals NHS Trust**	21
SW	**North Bristol NHS Trust**	35
SW	**Plymouth Hospitals NHS Trust**	23
	Others <15 FCEs (n= 17)	99
	Total	**507**

ii. PATIENTS WITH TUMOURS OF NEUROLOGICAL ORIGIN –BENIGN TUMOURS

Overall, 438 FCEs were identified which were likely to relate to benign tumours of neurological origin with an intradural spinal surgical procedure. The chart below gives more detail on the types of procedures conducted for these patients. Almost 40% relate to 'A445 Excision of lesion of intradural extramedullary spinal cord'.

Chart 12: Patients with benign tumours of neurological origin – intradural procedure codes recorded

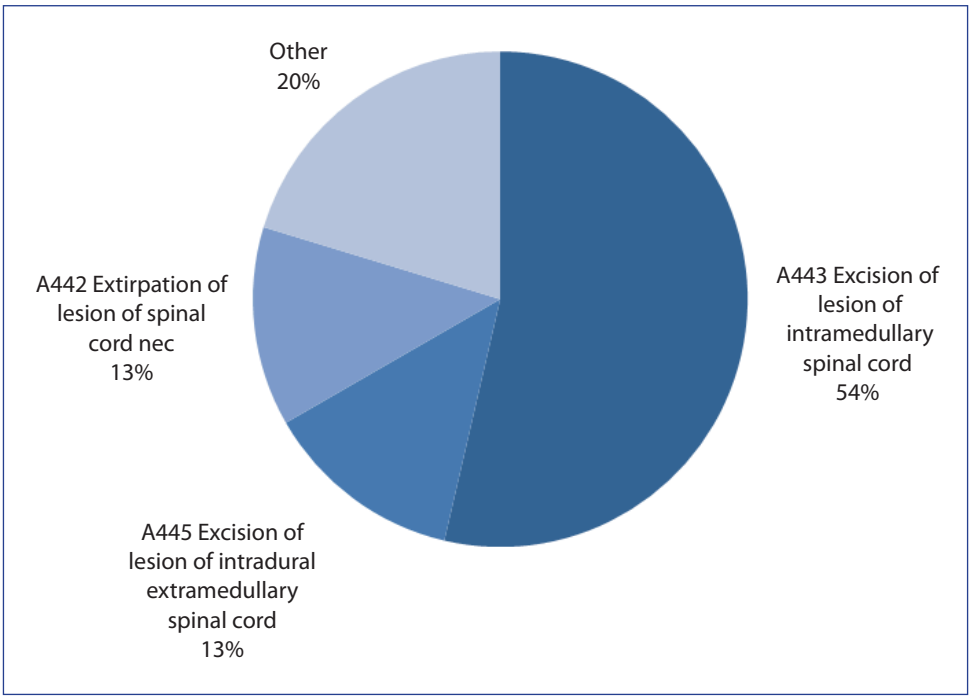


(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

iii. PATIENTS WITH TUMOURS OF NEUROLOGICAL ORIGIN –MALIGNANT TUMOURS

A smaller number of FCEs were identified which were likely to be malignant tumours of neurological origin with an intradural spinal surgical procedure (69). The chart below gives more detail on the types of procedures recorded for these patients.

Chart 13: Patients with malignant tumours of neurological origin – intradural procedure codes recorded



(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

Tumours of osseoligamentous origin

There were around 96 episodes recorded which related to tumours of osseoligamentous origin, where extradural procedures were recorded. These procedures were carried out by orthopaedic consultants and neurosurgeons, and were mainly elective.

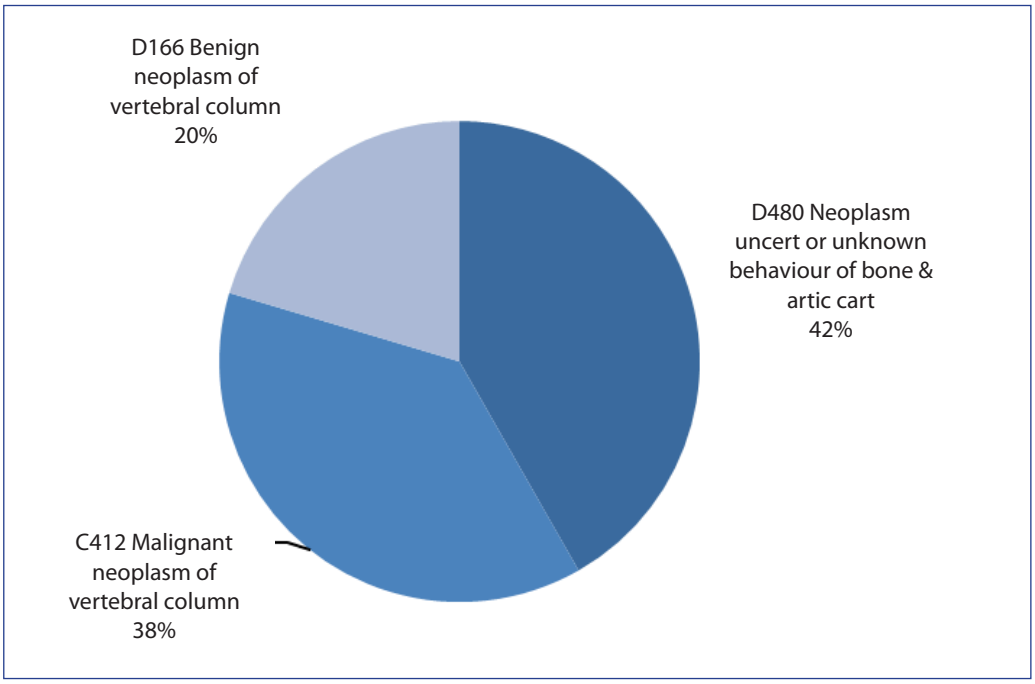
Table 37: Patients with malignant tumours of osseoligamentous origin (Consultant Main Speciality and Admission Method)

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	96	50%	35%	15%	26%	63%	11%
Non-Specialist Surgery	7	43%	57%	0%	0%	100%	0%
Total	**103**	**50%**	**37%**	**14%**	**24%**	**65%**	**11%**

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

As is shown in the table below, the majority of the episodes where an extradural or non-specialist procedure was recorded, related to benign tumours.

Chart 14: Patients with tumours of osseoligamentous origin -diagnosis codes recorded



(Note: FCEs. Based ALL diagnosis codes Refer to endnotes for exclusions)

The main procedures recorded for these patients were: 'biopsy of thoracic vertebra '(V472), 'biopsy of lumbar vertebra' (V473), 'excision of lesion of cervical vertebra' (V431), 'excision of lesion of thoracic vertebra' (V432), and 'vertebroplasty of fracture of spine' (V444). This is a small group of patients undergoing difficult surgical procedures, which should not be attempted in more than a few hospitals in England. The number of these procedures would suggest that this is a reasonable aim.

The table below demonstrates the main Trusts involved in carrying out extradural procedures for tumours of osseoligamentous origin. The counts of procedures are not included due to data restrictions relating to low counts of episodes.

Table 38: Trusts carrying out extradural procedures for patients with tumours of osseoligamentous origin – benign and malignant (Trusts>3 FCEs)

SCG	Provider
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**
YH	**Leeds Teaching Hospitals NHS Trust**
WM	**The Royal Orthopaedic Hospital NHS Foundation Trust**
WM	**University Hospitals Birmingham NHS Foundation Trust**
EE	**Cambridge University Hospitals NHS Foundation Trust**
LON	**Royal National Orthopaedic Hospital NHS Trust**

LON	**Imperial College Healthcare NHS Trust**
LON	**University College London Hospitals NHS Foundation Trust**
SW	**Taunton and Somerset NHS Foundation Trust**

PATIENTS WITH SPINAL TUMOURS – CHILDREN'S SERVICES

There were just over 200 FCEs with surgery that were likely to relate to children aged under 18 with spinal tumours (all types).

D) Spinal infection (potentially serious pathology)

i. DEFINITION OF PATIENT GROUP

For the purposes of this report, infection of the spine is identified through the diagnosis codes recorded for each patient (ICD10 Codes). A range of diagnosis codes can be used to indicate infection of the spine, these are: M462 Osteomyelitis of vertebra, M463 Infection of intervertebral disc (pyogenic), M464 Discitis, unspecified, M465 Other infective spondylopathies, M490 Tuberculosis of spine, M491 Brucella spondylitis, M492 Enterobacterial spondylitis, and M493 Spondylopathy in other infectious and parasitic diseases NEC. Patients with any of these diagnosis codes recorded, as either a primary or secondary diagnosis, are included in this analysis.

ii. PATIENTS WITH SPINAL INFECTION – GENERAL OVERVIEW

In total there were around 5,000 FCEs associated with patients with a diagnosis of infection of the spine. The majority of these cases were emergency admissions (75%). Where a surgical procedure was recorded the patients were mainly under the care of an orthopaedics consultant or neurosurgeon.

Some patients with extradural surgery were recorded as being under the care of consultants working outside orthopaedics and neurosurgery (138 FCEs). The highest number of these cases were under the care of general medicine consultants (41 FCEs) or consultants working with infectious diseases (21 FCEs). For all patients under the care of surgeons working outside of orthopaedics / neurosurgery with an extradural procedure, the main procedures recorded related to biopsy of lesion (V524, 40 FCEs), biopsy of lumbar vertebra (V473, 28 FCEs) and biopsy of thoracic vertebra (V472, 25 FCEs).

Table 39: Patients with spinal infection (Consultant Speciality and Admission Method)

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	453	39%	31%	30%	65%	21%	13%
Non-Specialist Surgery	97	43%	44%	12%	59%	26%	15%
Intradural Specialist Surgery	*	24%	22%	53%	80%	13%	7%
Pain & Neuro Modulation	*	0%	0%	100%	0%	67%	33%

Non-Specialist Non-Surgical procedures	111	41%	10%	49%	51%	49%	0%
Non-spinal procedure only	2734	16%	5%	79%	74%	17%	9%
No procedure recorded	1629	16%	4%	79%	81%	9%	11%
Total	**5072**	**19%**	**8%**	**73%**	**75%**	**16%**	**10%**

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

A high proportion of the FCEs had no procedure recorded. The highest number of these patients were under the care of a consultant registered in general medicine (37% of all FCEs with no procedure recorded). Overwhelmingly these were emergency admissions (81%), with an average length of stay of 12 days. There is some concern that a large number of patients with spinal infection are admitted under the care of other specialities where no biopsy was performed (or was not coded). It is generally considered that inadequate treatment of spinal infection i.e. not finding the infecting organism through blood cultures or biopsy and too short a period of intravenous antibiotics can result in poor outcome and make surgery more likely. A length of stay of only 12 days seems short for these patients.

Almost 3,000 patients with spinal infection had a non-spinal procedure recorded. These patients were mainly under the care of consultants working in general medicine (27%) orthopaedics (16%) or infectious diseases (9%). The main procedures recorded for these patients were diagnostic imaging (U01-U21, 43% of all non-spinal procedures) and procedures involving veins and other blood vessels (L73-L99, 15%).

As is shown in the table below, the most common diagnosis code found for patients with an infection of the spine related to discitis (56%). Many patients had a combination of diagnosis codes indicating infection of the spine, the most common combination of codes related to discitis and osteomyelitis (191 FCEs).

Table 40: Patients with spinal infection - Diagnosis codes used

Diagnosis code	Count
M464 Discitis, unspecified	2,821
M490 Tuberculosis of spine	750
M462 Osteomyelitis of vertebra	569
M463 Infection of intervertebral disc (pyogenic)	516
M465 Other infective spondylopathies	94
M492 Enterobacterial spondylitis	*
M491 Brucella spondylitis	*
M493 Spondylopathy in other infectious and parasitic diseases NEC	*
More than one spinal infection diagnosis	320
Total	**5,072**

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

ii. PATIENTS WITH SPINAL INFECTION – BIOPSIES

There were 333 FCEs recorded where a biopsy had been undertaken in association with spinal infection, the majority were recorded as the main procedure (n=284). As is shown in the table below, the main procedure recorded was biopsy of a lesion of an intervertebral disc.

Table 41: Patients with spinal infection – biopsy procedures

Main procedure code	Count
V524 Biopsy of lesion of intervertebral disc nec	121
V473 Biopsy of lumbar vertebra	93
V472 Biopsy of thoracic vertebra	47
V478 Other specified biopsy of spine	11
V479 Unspecified biopsy of spine	*
Other	*
Total	**284**

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

Overall, 79 providers had biopsy FCEs recorded for patients with a spinal infection, where the admission was recorded as an emergency. The median length of stay for patients admitted as an emergency, with a biopsy as the main procedure recorded, was 22 days, however the median length of stay varied across provider.

iii. PATIENTS WITH SPINAL INFECTION – SURGICAL INTERVENTIONS

Although biopsies were the main procedure recorded for this group of patients, a range of other procedures were recorded mainly in relation to extradural and non-specialist surgery. The table below illustrates the main procedures recorded (excluding biopsies). These procedures range from a washout/debridement that would be classed as a non-specialised spinal procedure, to a complex anterior and posterior debridement with stabilisation and reconstruction, which is definitely a specialised procedure. Unfortunately with spinal infection, inappropriate early management can result in an increased likelihood of requiring a major surgical procedure. It is therefore suggested that all spinal infections be managed by Consultants familiar with appropriate early management to reduce this potential increased morbidity and mortality.

Table 42: Patients with spinal infection – surgical procedures

Diagnosis code	Count
A482 Aspiration of lesion of spinal cord	26
V242 Primary decompression of thoracic spinal cord nec	20
V254 Primary posterior laminectomy decompression of lumbar spinal cord	19
V411 Posterior attachment of correctional instrument to spine	16

V548 Other specified other operations on spine	15
V255 Primary posterior decompression of lumbar spinal cord nec	11
V241 Primary decompression of thoracic spinal cord and fusion of joint of thoracic spine	10
V381 Primary fusion of joint of thoracic spine	8
V408 Other specified stabilisation of spine	8
V331 Primary laminectomy excision of lumbar intervertebral disc	8
V294 Primary anterior excision of cervical intervertebral disc and interbody fusion of joint of cervical spine	7
V388 Other specified primary fusion of other joint of spine	7
V253 Primary posterior decompression of lumbar spinal cord and intertransverse fusion of joint of lumbar spine	7
Other procedures <7 n=80)	149
Total	**311**

(Note: FCEs. Based ALL diagnosis codes. Refer to endnotes for exclusions)

The table below demonstrates the providers involved in carrying out the highest numbers of surgical interventions for patients with spinal infection (excluding spinal biopsy).

Table 43: Patients with spinal infection – providers with surgical procedures

10 or more surgical FCEs
Lancashire Teaching Hospitals NHS Foundation Trust
The Newcastle Upon Tyne Hospitals NHS Foundation Trust
St George's Healthcare NHS Trust
University College London Hospitals NHS Foundation Trust
Leeds Teaching Hospitals NHS Trust
Salford Royal NHS Foundation Trust
University Hospitals Coventry And Warwickshire NHS Trust
Brighton And Sussex University Hospitals NHS Trust

iv. PATIENTS WITH SPINAL INFECTION – CHILDREN'S SERVICES

There were 168 FCEs that related to admissions for children with spinal infections. As is the case with adults, over half of these patients had no procedure recorded (56%).

E) Spinal trauma

i. DEFINING THE PATIENT GROUP

Within this report patients who have a spinal trauma injury are analysed as two main groups – those who have a spinal cord injury and those who have a vertebral column injury. Within the group of patients who have a vertebral column injury, a distinction is made between those who have evidence of osteoporosis and those who do not have this condition recorded. The table below illustrates the diagnosis codes used for each group of patients. However, evidence suggests that a diagnosis of osteoporosis may not always be coded (as will be demonstrated later in this section).

Table 44: Diagnosis codes included - patients with spinal trauma

Surgery Type	ICD 10 Code
Spinal cord injury	S140 Concussion and oedema of cervical spinal cord; S141 Other and unspecified injuries of cervical spinal cord; S240 Concussion and oedema of thoracic spinal cord; S241 Other and unspecified injuries of thoracic spinal cord; S340 Concussion and oedema of lumbar spinal cord; S341 Other injury of lumbar spinal cord; S343 Injury of cauda equina, T093 Injury of spinal cord, level unspecified
Vertebral column injury with no evidence of osteoporosis	S120 Fracture of first cervical vertebra; S121 Fracture of second cervical vertebra; S122 Fracture of other specified cervical vertebra; S127 Multiple fractures of cervical spine; S128 Fracture of other parts of neck; S129 Fracture of neck, part unspecified; S130 Traumatic rupture of cervical intervertebral disc; S131 Dislocation of cervical vertebra; S132 Dislocation of other and unspecified parts of neck; S133 Multiple dislocations of neck; S220 Fracture of thoracic vertebra; S221 Multiple fractures of thoracic spine; S230 Traumatic rupture of thoracic intervertebral disc; S231 Dislocation of thoracic vertebra; S232 Dislocation of other and unspecified parts of thorax; S320 Fracture of lumbar vertebra; S321 Fracture of sacrum; S322 Fracture of coccyx; S330 Traumatic rupture of lumbar intervertebral disc; S331 Dislocation of lumbar vertebra; S332 Dislocation of sacroiliac and sacrococcygeal joint; S344 Injury of lumbosacral plexus; T021 Fractures involving thorax with lower back and pelvis AND absence of codes indicating osteoporosis (as set out below).
Vertebral column injury with evidence of osteoporosis	Codes for Vertebral column injury (as set out above) together with diagnosis codes M80.0-M80.9; M810-M819.; M484 Fatigue fracture of vertebra; M485 Collapsed vertebra, not elsewhere classified

Spinal cord injury

i. PATIENTS WITH SPINAL CORD INJURY – GENERAL OVERVIEW

Around 1,400 FCEs relating to spinal cord injury were recorded on the HES database in 2010/11. It is difficult to assess how accurately this represents the actual volume of activity relating to spinal cord injuries, as the actual incidence of spinal cord injury is not known, due to problems associated with accurately diagnosing and classifying spinal cord injuries and the fact that they can be treated in both specialist and non-specialist services (National Spinal Cord Injury Strategy Board 2011). The Spinal Cord Injury Strategy Board estimated the incidence

of spinal cord injury to be between 12-16 per million population, with around 75% of cases related to trauma (based on data from Spinal Cord Injury Centres). We would thus expect around 500 new cases of spinal cord injury relating to trauma in England each year, for adults. The cases identified in the HES data are thus likely to reflect both new cases and patients with pre-existing spinal cord injuries accessing treatment.

The table below shows the numbers of FCES relating to spinal cord injury as a primary or secondary diagnosis. For the purposes of this report, cases were included if they had a diagnosis of spinal cord injury as a primary diagnosis, or as a secondary diagnosis where the primary diagnosis related to trauma codes (see table below for further illustration).

Table 45: Cases included – possible cases with spinal cord injury

Surgery Type	Total FCE count	Included in this analysis	Comment
Primary diagnosis codes = spinal cord injury	870	✓	
Secondary diagnosis codes = spinal cord injury AND primary diagnosis code = trauma (S00 – T14)	502	✓	Likely to represent patients with multiple injuries e.g. 18% have 'S127 Multiple fractures of cervical spine' as main diagnosis
Secondary diagnosis codes = spinal cord injury AND primary diagnosis code relates to other conditions	185	✖	Spinal cord injury may not be related to main reason for admission e.g. 9% have pneumonia as main diagnosis

The table below demonstrates the hospital activity recorded for patients with a spinal cord injury. As might be expected, the majority of cases were emergency admissions (73%) or transfers (22%). Only a small minority of FCEs had a spinal procedure recorded (around 17%) and the highest proportion received no procedure/ diagnostics (54%) or a non-spinal procedure (28%). The relatively high rate of transfers needs to be taken into account when considering the volume of FCEs with no procedure recorded, as patients may have received an intervention in earlier periods of care. Just over half of all the FCEs are recorded as under the care of a neurosurgeon or orthopaedics consultant. Where the patients did not have a procedure recorded, around 55% were under the care of a neurosurgeon or orthopaedics consultant, 11% were under the care of an emergency consultant and 9% under a consultant in general medicine. Where patients received other forms of procedures, around half were related to rehabilitation (U50-54, 36%) or ventilation (E82, 16%). These patients were mainly under the care of a neurology consultant (26%) or orthopaedics consultant (24%). There were 219 spinal procedures performed which might be consistent with instrumented stabilisations.

Table 46: Patients with spinal cord injury– main specialty of consultant and admission method

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	201	40%	45%	15%	76%	2%	22%
Non-Specialist Surgery	18	17%	72%	11%	56%	22%	22%
Intradural Specialist Surgery	*	14%	71%	14%	57%	43%	0%
Pain & Neuro Modulation	*	0%	0%	100%	0%	0%	100%
Non-Specialist Non-Surgical procedures	12	42%	33%	25%	58%	8%	33%
Non-spinal procedure only	386	24%	9%	67%	58%	8%	34%
No procedure recorded / Diag. imaging and tests	747	35%	20%	45%	82%	3%	16%
Total	**1372**	**32%**	**22%**	**46%**	**73%**	**5%**	**22%**

(Note: FCEs. Based first diagnosis codes. Refer to endnotes for exclusions)

Vertebral column injury

i. PATIENTS WITH VERTEBRAL COLUMN INJURY WITHOUT OSTEOPOROSIS- GENERAL OVERVIEW

The table below sets out the numbers of FCEs with vertebral column injury recorded as either a primary or secondary diagnosis. All cases with evidence of osteoporosis were excluded and are discussed in a separate section.

Table 47: Cases included – possible cases with vertebral column injury (without evidence of osteoporosis)

FCE diagnosis codes	Total FCE count	Included in this analysis	Comment
Primary diagnosis code = vertebral column injury	13,702	✓	
Secondary diagnosis codes = vertebral column injury AND primary diagnosis code = trauma (S00 – T14)	4,791	✓	Likely to represent patients with multiple injuries e.g. 23% have 'S06 Intracranial injury' as main diagnosis
Secondary diagnosis codes = vertebral column injury AND primary diagnosis code relates to other conditions	3,490	✖	Vertebral column injury may not be related to main reason for admission e.g. 7% have pneumonia as main diagnosis and 5% have 'Other disorders of urinary system'.

Overall 14,000 FCEs were recorded in 2010/11 where the patient had a primary diagnosis relating to vertebral column injury, and just under 5,000 had diagnosis codes indicating multiple injuries, including vertebral column injury.

Table 48: Patients with vertebral column injury (without evidence of osteoporosis) – main specialty of consultant and admission method

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	1,386	45%	48%	8%	66%	14%	20%
Non-Specialist Surgery	100	67%	28%	5%	74%	12%	14%
Intradural Specialist Surgery	*	50%	50%	0%	100%	0%	0%
Pain & Neuro Modulation	*	0%	40%	60%	100%	0%	0%
Non-Specialist Non-Surgical procedures	158	42%	35%	23%	66%	13%	22%
Non-spinal procedure only	3,717	47%	8%	45%	82%	4%	14%
No procedure recorded / Diag. imaging and tests	13,125	48%	7%	45%	93%	1%	6%
Total	**18,493**	**48%**	**11%**	**42%**	**88%**	**3%**	**9%**

(Note: FCEs. Based on first diagnosis codes. Refer to endnotes for exclusions.)

i. PATIENTS WITH VERTEBRAL COLUMN INJURY (WITHOUT OSTEOPOROSIS)- NON-SURGICAL TREATMENT

The main form of care received by patients with a vertebral column injury related to observation/diagnostic imaging/tests (71%) or non-spinal procedures (20%). The main non-spinal procedures recorded related to rehabilitation (16%) or primary open reduction of fracture of bone and intramedullary /extramedullary fixation (15%). Just under half of all patients who received a non-spinal procedure were under the care of an orthopaedics consultant, while a further 10% were under the care of a general surgeon.

Over two-fifths of patients who did not receive a procedure were under the care of a consultant based outside orthopaedics, mainly in general medicine (12%), Emergency Department (12%) or geriatric medicine (8%). It would be sensible to assume that the 8% under the care of geriatric medicine consultants were actually osteoporotic fractures. The median length of stay for FCEs with no procedure recorded was 5 days (for emergency admissions). However, this varied across providers.

ii. PATIENTS WITH VERTEBRAL COLUMN INJURY (WITHOUT OSTEOPOROSIS)- SURGICAL INTERVENTION

Just fewer than one in ten FCEs related to surgical activity, with the main form of procedure recorded relating to extradural surgery. The table below demonstrates the range of procedures carried out and the volumes involved (main procedure). These patients were mainly under the care of an orthopaedics consultant or neurosurgeon and the median length of stay was 10 days (for emergency admissions and transfers).

Table 49: Patients with vertebral column injury – surgical procedures (main procedure code)

Procedure	FCE Count
Posterior instrumented stabilisation (V468, V464, V462, V294, V411, V452,V443,V461,V381,V408, V469,V383,V372,V409,V463,V377,V388,V458)	995
Anterior stabilisation (mainly cervical) (V294,V224, V221,V442)	50
Vertebroplasty (V444)	144
Kyphoplasty (V445)	92
Misc (All other surgical spinal codes)	207
Total	**1,488**

(Note: FCEs. Based on main procedure codes. Refer to endnotes for exclusions)

The table below gives further detail on the main Trusts involved with posterior instrumented stabilisation for these patients.

Table 50: Trusts carrying out posterior instrumented stabilisation for patients with vertebral column injury

SCG	Provider	Count
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	39
NW	**The Walton Centre NHS Foundation Trust**	53
NW	**Lancashire Teaching Hospitals NHS Foundation Trust**	52
NW	**Salford Royal NHS Foundation Trust**	39
YH	**Leeds Teaching Hospitals NHS Trust**	41
YH	**Sheffield Teaching Hospitals NHS Foundation Trust**	39
YH	**Hull and East Yorkshire Hospitals NHS Trust**	34
EM	**Nottingham University Hospitals NHS Trust**	37
EE	**Cambridge University Hospitals NHS Foundation Trust**	36
LON	**King's College Hospital NHS Foundation Trust**	52
LON	**Barts and The London NHS Trust**	33
LON	**St George's Healthcare NHS Trust**	31

SC	**Southampton University Hospitals NHS Trust**	37
	Other (<30, n= 56)	472
	Total	**995**

(Note: FCEs. Based on main procedure codes. Refer to endnotes for exclusions)

iv. PATIENTS WITH VERTEBRAL COLUMN INJURY WITH OSTEOPOROSIS – OVERVIEW

Osteoporosis is a major cause of vertebral column injury. There are several ways in which a vertebral column injury with evidence of osteoporosis could be coded. The table below sets out the diagnosis codes that have been selected for inclusion within this analysis.

Table 51: Cases included – possible cases with vertebral column injury (with evidence of osteoporosis)

FCE diagnosis codes	Total FCE count	Included in this analysis	Comment
Primary diagnosis code = vertebral column injury AND osteoporosis coded as a secondary diagnosis	1,669	✓	
Primary diagnosis code = osteoporosis AND secondary diagnosis is vertebral column injury	7,505	✓	
Primary diagnosis code = trauma (S00 – T14) AND vertebral column injury and osteoporosis are both coded as secondary diagnosis codes	226	✓	Likely to represent patients with multiple injuries e.g. 27% have 'S325 Fracture of pubis' as primary diagnosis.
Primary diagnosis code is 'M80 osteoporosis with pathological fracture' and the site code indicates: 'head, neck, ribs, skull, trunk, vertebral column'	14,988	✓	These are likely to be predominantly vertebral column injuries
Vertebral column injury and osteoporosis are both recorded as secondary diagnosis codes	564	✖	Vertebral column injury may not be related to main reason for admission e.g. the highest proportion (10%) relate to pneumonia (J18).

(Note: M484, M485 as a primary diagnosis are taken to indicate osteoporosis AND a vertebral column injury)

Overall, just over 24,000 FCEs were recorded which were likely to be vertebral column injuries related to osteoporosis. The majority of these cases received no intervention/diagnostic imaging or tests, within the period of care under consideration.

Table 52: Patients with vertebral column injury (with evidence of osteoporosis) – main specialty of consultant and admission method

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	915	51%	25%	24%	20%	76%	4%
Non-Specialist Surgery	76	54%	36%	11%	20%	71%	9%
Intradural Specialist Surgery	*	0%	80%	20%	60%		40%
Pain & Neuro Modulation	*	29%	6%	65%	12%	88%	0%
Non-Specialist Non-Surgical procedures	837	22%	3%	75%	6%	94%	0%
Non-spinal procedure only	5,385	9%	1%	90%	45%	50%	5%
No procedure recorded / Diag. imaging and tests	17,153	8%	1%	91%	95%	3%	2%
Total	**24,388**	**11%**	**2%**	**87%**	**78%**	**19%**	**3%**

(Note: FCEs. Refer to endnotes for exclusions)

i. PATIENTS WITH VERTEBRAL COLUMN INJURY (WITH OSTEOPOROSIS)- NON-SURGICAL TREATMENT

For patients with vertebral column injuries relating to osteoporosis, the main form of treatment received related to observation / diagnostic imaging / tests (70%) or non-spinal procedures (22%). The main non-spinal procedures recorded mainly related to 'Miscellaneous operations' (X28-X68, 41%), particularly 'Continuous intravenous infusion of therapeutic substance NEC' (X292,26%) and rehabilitation (13%). The vast majority of patients who received non-spinal procedures were under the care of consultants working outside orthopaedics, mainly consultants in General Medicine (29%) or Rheumatology (16%).

As we have seen, most patients with a vertebral column injury relating to osteoporosis did not receive any intervention other than diagnostic imaging or tests. These patients were mainly under the care of a consultant based in general medicine or geriatrics (39% and 22% respectively). The median length of stay for FCEs with no procedure recorded was 10 days (for emergency admissions).

ii. PATIENTS WITH VERTEBRAL COLUMN INJURY (WITH OSTEOPOROSIS)- SURGICAL INTERVENTION

Only a small proportion of the cases identified involved surgical activity. The table below demonstrates the range of procedures carried out and the volumes involved (main procedure). These patients were mainly under the care of an orthopaedics consultant or neurosurgeon and the median length of stay was 16 days (for emergency admissions).

Table 53: Patients with vertebral column injury (with evidence of osteoporosis) – surgical procedures (main procedure code)

Procedure	FCE Count
Posterior instrumented stabilisation (V468, V464, V462, V294, V411, V452,V443,V461,V381,V408, V469,V383,V372,V409,V463,V377,V388,V458)	69
Anterior stabilisation (mainly cervical) (V294,V224, V221,V442)	7
Vertebroplasty (V444)	508
Kyphoplasty (V445)	251
Misc (All other surgical spinal codes)	161
Total	**996**

(Note: FCEs. Based on main procedure codes. Refer to endnotes for exclusions)

Patients with spinal trauma – children's services

There were just over 80 FCEs relating to spinal cord injuries in children, and 828 with vertebral column injuries. Very few of these patients received spinal surgical interventions, with the main procedures recorded related to diagnostic imaging and testing.

F) Spinal deformity

i. DEFINITION OF PATIENT GROUP

Spinal deformity can be related to a number of different conditions as is specified in the table below. Within this analysis the patients have been separated into four age groups, as the age of the patient, along with the condition, will have an important influence on appropriate care pathways. These age groups are patients aged 0-10, 10-17, 18-49 and 50+.

Table 54: Diagnosis codes included (primary diagnosis) – patients with spinal deformity

Patient group	ICD 10 Code
Spinal deformity	G710 Muscular dystrophy , G809 Infantile cerebral palsy, unspecified, M401 Other secondary kyphosis; M402 Other and unspecified kyphosis; M403 Flatback syndrome, M404 Other lordosis; M405 Lordosis, unspecified; M410 Infantile idiopathic scoliosis; M411 Juvenile idiopathic scoliosis; M412 Other idiopathic scoliosis; M413 Thoracogenic scoliosis; M414 Neuromuscular scoliosis; M415 Other secondary scoliosis; M418 Other forms of scoliosis; M419 Scoliosis, unspecified; M420 Juvenile osteochondrosis of spine, M438 Other specified deforming dorsopathies; M439 Deforming dorsopathy, unspecified, M45X Ankylosing spondylitis, M928 Other specified juvenile osteochondrosis, Q675 Congenital deformity of spine, Q763 Congenital scoliosis due to congenital bony malformation, Q850 Neurofibromatosis (nonmalignant), Q874 Marfan's syndrome,

The tables below demonstrate that there is considerable variation in the diagnosis code recorded based on the age group of the patient. For patients aged under 18, the highest number of diagnosis codes recorded related to cerebral palsy and juvenile idiopathic scoliosis/unspecified scoliosis. For patients aged over 18, the highest number of diagnosis codes related to Ankylosing spondylitis, and scoliosis. It is important to note that these represent the main diagnosis codes recorded for the admission and do not necessarily imply that the admission was for a spinal problem or even a problem related to the spine (unless a spinal procedure is recorded).

Table 55: Main diagnosis codes recorded for admitted patients aged under 18 (aged 0-17)

Main Diagnosis	0-10 Age Group	11-17 Age Group
G809 Infantile cerebral palsy, unspecified	1,000	503
M411 Juvenile idiopathic scoliosis	45	724
M419 Scoliosis, unspecified	249	435
G710 Muscular dystrophy	187	319
M410 Infantile idiopathic scoliosis	254	96
M414 Neuromuscular scoliosis	81	240
Q850 Neurofibromatosis (non-malignant)	182	76
M412 Other idiopathic scoliosis	18	185
Q675 Congenital deformity of spine	138	52
Q763 Congenital scoliosis due to congenital bony malformation	126	33
M402 Other and unspecified kyphosis	27	40
Q874 Marfan's syndrome	20	31
M418 Other forms of scoliosis	13	18
Other	19	63
TOTAL	**2,359**	**2,815**

(Note: FCEs. Based on main diagnosis. Refer to endnotes for exclusions)

Table 56: Main diagnosis codes recorded for admitted patients aged 18 and over (aged 18+)

Main Diagnosis	18-49 Age Group	50+ Age Group
M45X Ankylosing spondylitis	2,392	2,030
M419 Scoliosis, unspecified	291	1,300
Q850 Neurofibromatosis (non-malignant)	413	137
G710 Muscular dystrophy	380	167
G809 Infantile cerebral palsy, unspecified	415	70

M402 Other and unspecified kyphosis	59	195
M418 Other forms of scoliosis	35	164
M411 Juvenile idiopathic scoliosis	144	20
M414 Neuromuscular scoliosis	70	29
M412 Other idiopathic scoliosis	52	35
Q675 Congenital deformity of spine	34	36
M420 Juvenile osteochondrosis of spine	59	10
M405 Lordosis, unspecified	34	35
Other	146	183
Total	**4,524**	**4,411**

(Note: FCEs. Based on main diagnosis. Refer to endnotes for exclusions)

A) Patients aged under 18

i. PATIENTS AGED UNDER 18 WITH SPINAL DEFORMITY – OVERVIEW OF ACTIVITY

For patients aged under 18, the main spinal activity recorded related to extradural surgery, which was overwhelmingly under the care of an orthopaedic surgeon. For this group of patients the main procedure recorded was V411 Posterior attachment of correctional instrument to spine (54% of all spinal procedures) and V418 Other specified instrumental correction of deformity of spine (13% of all spinal procedures).

It is evident that a high number of non-spinal procedures were recorded for these patients. A significant proportion of these procedures related to drug treatments (which are unlikely to be linked to treatment for spinal deformity) and the only procedure of note is 182 patients having Immobilisation using plaster cast (X48).

Table 57:Patients aged 0-10 with spinal deformity: overview of activity

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	242	99%	0%	1%	0%	100%	0%
Non-Specialist Surgery	*	100%	0%	0%	0%	100%	0%
Intradural Specialist Surgery	*	0%	100%	0%	0%	100%	0%
Pain & Neuro Modulation	15	0%	67%	33%	7%	93%	0%

Non-Specialist Non-Surgical procedures	132	100%	0%	0%	0%	100%	0%
Non-spinal procedure only	1539	44%	2%	53%	4%	96%	0%
No procedure recorded	418	31%	1%	68%	26%	70%	4%

(Note: FCEs. Based on main diagnosis. Refer to endnotes for exclusions)

Table 58:Patients aged 11-17 with spinal deformity: overview of activity

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	1020	99%	0%	1%	0%	99%	0%
Non-Specialist Surgery	*	100%	0%	0%	0%	100%	0%
Intradural Specialist Surgery	*	0%	100%	0%	0%	100%	0%
Pain & Neuro Modulation	40	0%	38%	63%	0%	100%	0%
Non-Specialist Non-Surgical procedures	28	96%	0%	4%	0%	100%	0%
Non-spinal procedure only	828	43%	1%	55%	6%	94%	0%
No procedure recorded	871	49%	0%	51%	8%	91%	1%

(Note: FCEs. Based on main diagnosis. Refer to endnotes for exclusions)

ii. PATIENTS AGED UNDER 18 WITH SPINAL DEFORMITY –CORRECTIONAL SURGERY

As has been demonstrated, the main surgical procedures undertaken for spinal deformity, for patients aged under 18, related to extradural surgery. Over a thousand FCEs were recorded with posterior instrumented spinal deformity correction procedures (in any of the procedure fields) for patients aged under 18, with a diagnosis related to spinal deformity (table 56). The majority of such procedures involved three levels of the spine, with almost all cases under the care of an orthopaedic surgeon, with an elective mode of admission (almost 100%).

Table 59: Patients aged under 18 with spinal deformity –type of correctional surgery

Type of surgery	Count	Level of spine indicated			
		No level indicated	One level	Two levels	Three levels
Posterior instrumented spinal deformity correction	1118	227	55	58	778
Anterior instrumented spinal deformity correction	68	4	0	3	61
Anterior + Posterior instrumented scoliosis correction	14*	7	0	0	7
Misc surgery	28	8	2	5	13
Jacket application / change	182				

*(Note: FCEs. Based on ALL procedure codes, except for Jacket applications which are based on main procedure only. Posterior instrumented spinal deformity correction = V411, V418, V419; Anterior instrumented spinal deformity correction = V412, V423. Anterior + Posterior instrumented scoliosis correction = V414; Misc surgery = V413,V421,V425,V426,V428,V429, O091; Jacket application / change = x481,x482,x483,x488,x489. *This table is likely to under-estimate combined anterior and posterior correction surgery as V414 would only be used if both approaches were used in the same theatre session – this analysis thus excludes those carried out as staged operations. Refer to endnotes for further exclusions)*

The table below shows the providers involved in carrying out posterior attachment of correctional-instrumented procedures where three levels of the spine were indicated (V411 plus V553), and the median length of stay (for elective admissions where length of stay was recorded).

Table 60: Patients aged 0-17 with spinal deformity, FCEs with V411 posterior attachment of a correctional instrument to the spine with three levels of the spine indicated (count and median length of stay)

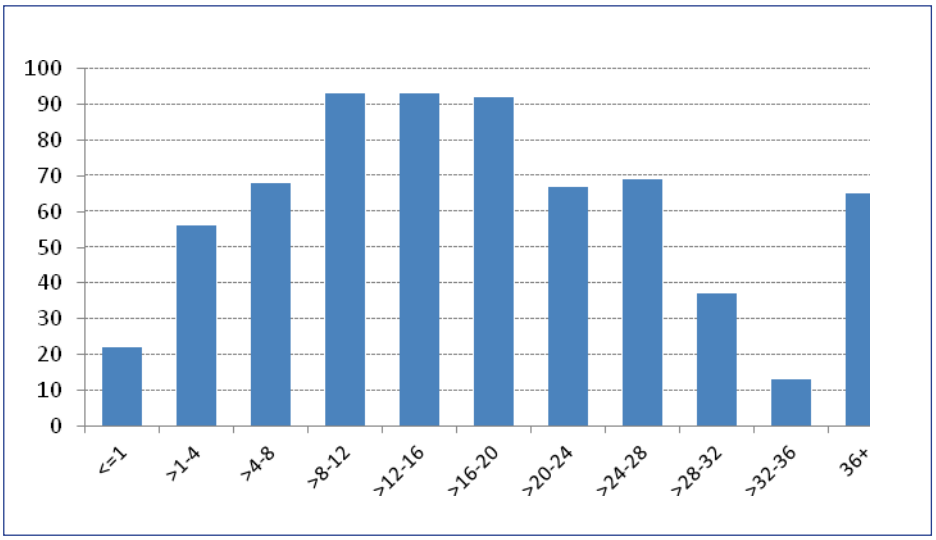
SCG	Provider	Count	Median LOS
NE	**The Newcastle Upon Tyne Hospitals NHS Foundation Trust**	18	8
NW	**The Royal Orthopaedic Hospital NHS Foundation Trust**	61	7*
NW	**Central Manchester University Hospitals NHS Foundation Trust**	21	7.5*
NW	**Alder Hey Children's NHS Foundation Trust**	16	8
YH	**Sheffield Children's NHS Foundation Trust**	49	
YH	**Leeds Teaching Hospitals NHS Trust**	24	8.5*
EM	**Nottingham University Hospitals NHS Trust**	50	7.5*
WM	**University Hospital Of North Staffordshire NHS Trust**	11	6

EE	**Cambridge University Hospitals NHS Foundation Trust**	28	6
EE	**Norfolk and Norwich University Hospitals NHS Foundation Trust**	26	
LON	**Royal National Orthopaedic Hospital NHS Trust**	161	11*
LON	**Great Ormond Street Hospital For Children NHS Trust**	55	6*
LON	**Guy's and St Thomas' NHS Foundation Trust**	25	7*
LON	**St George's Healthcare NHS Trust**	24	6*
SC	**Oxford Radcliffe Hospitals NHS Trust**	50	6
SC	**Nuffield Orthopaedic Centre NHS Trust**	14	6
SW	**North Bristol NHS Trust**	47	6
SW	**Royal Devon and Exeter NHS Foundation Trust**	21	7
SW	**Taunton and Somerset NHS Foundation Trust**	12	7
	Other <10 FCEs	30	7
	Total	**746**	**7**

*(Note: Excludes FCEs with an emergency method of admission or no length of stay information. * = includes staged operations which will have an impact on length of stay – identified via presence of Y703, Y711).*

The median waiting time for patients who had an elective admission (booked and waiting list) was 16.3 weeks. The chart below demonstrates the enormous range in waiting times, with 10% of patients waiting for over 36 weeks (from the decision to admit to admission date).

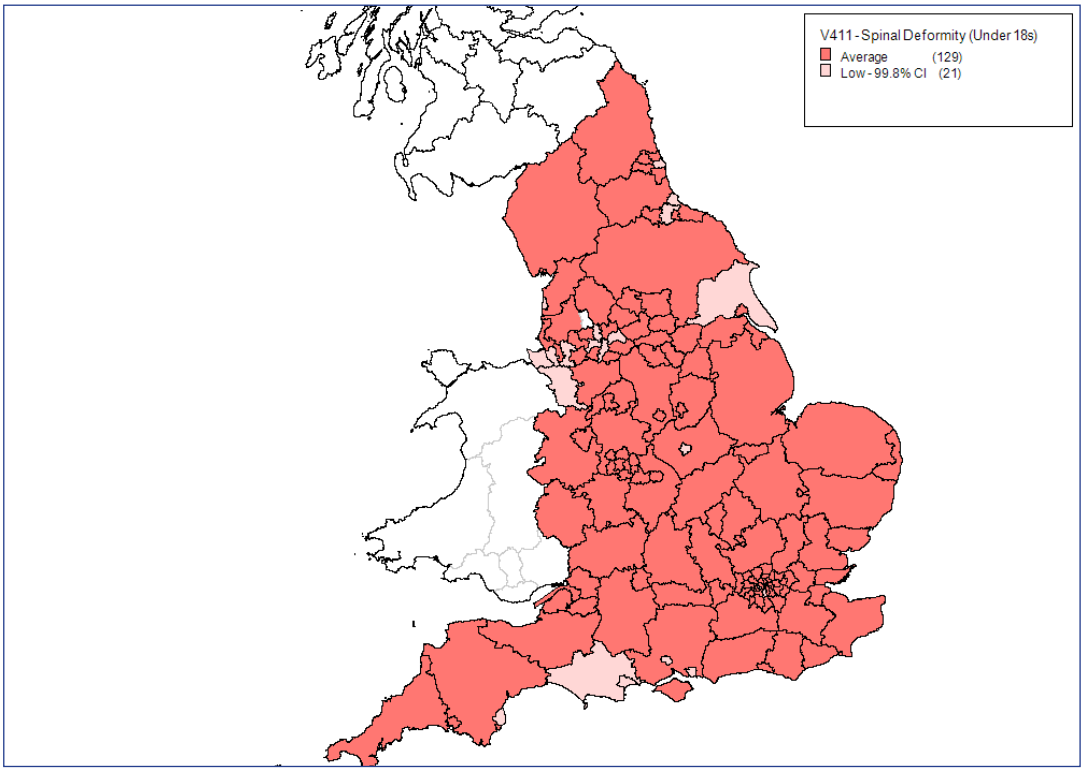
Chart 15: Patients aged 0-17 with spinal deformity, FCEs with V411 posterior attachment of a correctional instrument to the spine with three levels of the spine indicated (median waiting time for elective admissions)



(Note: FCEs. Based on main diagnosis. Refer to endnotes for exclusions. Admission method 11 & 12 with elecdur recorded)

There is little geographical variation in the numbers of procedures carried out for patients aged under 18 with spinal deformity, once demographic factors have been controlled for, as is shown in the map below. This largely reflects the small numbers of operations involved at the PCT level. Further work is needed to analyse variations in patient pathways and waiting times at different geographical levels.

Map 5: Surgical procedures carried out for spinal deformity for patients aged under 18 (age standardised)



B) Patients aged 18+

i. PATIENTS AGED 18+ WITH SPINAL DEFORMITY – OVERVIEW OF ACTIVITY

For patients aged 18 and over, a lower proportion was recorded as receiving surgical procedures, compared with patients who are aged under 18 (7% compared with 24% of all FCEs). Conversely, a higher proportion was recorded as receiving injections (14% compared with 3% of all FCEs).

The main spinal activity recorded for this group of patients related to extradural surgery, which was overwhelmingly under the care of an orthopaedic surgeon. Once again, the main activity recorded was V411 Posterior attachment of correctional instrument to spine (51% of all spinal procedures).

Just over half of the FCEs with 'other' (non-spinal) procedures related to Specified Drug Therapy (X70-X97) (55%). Almost all of these FCEs were for patients with a diagnosis of Ankylosing spondylitis. These drug therapy procedures are thus likely to be linked to treatment for the patient's general condition.

Table 61: Patients aged 18-49 with spinal deformity: overview of activity

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	317	95%	4%	1%	0%	100%	0%
Non-Specialist Surgery	*	73%	15%	12%	4%	96%	0%
Intradural Specialist Surgery	*	0%	80%	20%	20%	80%	0%
Pain & Neuro Modulation	52	2%	10%	88%	2%	98%	0%
Non-Specialist Non-Surgical procedures	246	33%	1%	66%	1%	99%	0%
Non-spinal procedure only	3096	6%	1%	93%	5%	95%	1%
No procedure recorded	782	12%	1%	87%	28%	71%	1%

(Note: FCEs. Based on main diagnosis. Refer to endnotes for exclusions)

Table 62: Patients aged 50+ with spinal deformity: overview of activity

Surgery Type	Count	Consultant speciality (main)			Admission method		
		T&O	Neuro	Other	Emer	Elect	Transfers
Extradural Specialist Surgery	274	91%	8%	1%	4%	95%	1%
Non-Specialist Surgery	108	80%	18%	3%	3%	97%	0%
Intradural Specialist Surgery	*	0%	67%	33%	0%	100%	0%
Pain & Neuro Modulation	*	25%	0%	75%	0%	100%	0%
Non-Specialist Non-Surgical procedures	990	37%	2%	61%	0%	100%	0%
Non-spinal procedure only	2268	5%	1%	94%	8%	91%	1%

No procedure recorded	744	14%	1%	85%	53%	44%	3%

(Note: FCEs. Based on main diagnosis. Refer to endnotes for exclusions)

Injections were recorded as the main procedure for 1,236 FCEs with a diagnosis of spinal deformity. The table below demonstrates that the main injections were facet joints and epidurals. The injections were predominantly under the care of an anaesthetist (57% of all injections for these patients).

Table 63: Patients aged 18 and over with spinal deformity -treatment with injection

Injection group	Count	Consultant speciality (main)		
		T&O	Neuro	Other
Facet joint	596	31%	1%	69%
Epidural	385	38%	4%	57%
Nerve root	187	51%	1%	49%
Other	68	24%	4%	72%
Total	**1236**	**36%**	**2%**	**62%**

(Note: FCEs. Based on primary diagnosis code. Facet joint injections = V544, nerve root = A577, A735, Epidural = A521-A529, other = all other injection codes. Refer to endnotes for exclusions)

ii. PATIENTS AGED 18 AND OVER WITH SPINAL DEFORMITY –CASES WITH NO PROCEDURE RECORDED

In total, 1,526 of these cases relate to a period of care with no procedure recorded. Only around one in ten of these patients were under the care of an orthopaedics consultant (13%) and the highest number were under the care of a rheumatologist (21%), a consultant working in general medicine (19%), or in respiratory medicine (15%).

Two fifths of these patients (40%) were admitted as an emergency with a median length of stay of 2 days. Patients admitted via an elective route (58%) had a median length of stay of zero days. The secondary diagnosis codes suggest that for 13% of these patients other forms of treatment were carried out (Z751 Other medical care) and a further 10% did not have the planned procedure undertaken (Z53 Persons encountering health services for specific procedures, not carried out).

iii. Patients aged 18 and over with spinal deformity –correctional surgery

Where patients had some form of spinal deformity surgery, the highest number of cases related to the posterior attachment of a correctional instrument to the spine– 446 FCEs, with most of the surgery involving three levels of the spine. The table below illustrates the volume of procedures recorded for each type of deformity surgery. Where an FCE relates to more than one type of surgery, it is allocated to just one surgery group, in the order indicated in the table below.

Table 64: Patients aged 18 and over with spinal deformity –type of correctional surgery

Type of surgery	Count	Level of spine indicated			
		No level indicated	One level	Two levels	Three levels
Posterior instrumented spinal deformity correction	446	12	26	31	377
Anterior instrumented spinal deformity correction	28	*	*	*	22
Anterior + Posterior instrumented scoliosis correction	*	*	*	*	*
Misc surgery	30	*	*	*	19
Jacket application / change	*				

(Note: FCEs. Based on ALL procedure codes, except for Jacket applications, which are based on main procedure only. Posterior instrumented spinal deformity correction = V411, V418, V419; Anterior instrumented spinal deformity correction = V412, V423. Anterior + Posterior instrumented scoliosis correction = V414; Misc surgery = V413,V421,V425,V426,V428,V429, O091; Jacket application / change = x481,x482,x483,x488,x489. Refer to endnotes for exclusions)

The table below details the providers involved in carrying out the main type of posterior instrumented spinal deformity correction surgery, where three levels of the spine were specified (V411 plus V553), along with the median length of stay (for elective admissions where length of stay is recorded).

Table 65: Patients aged 18+ with spinal deformity, FCEs with V411 posterior attachment of a correctional instrument to the spine (count and median length of stay)

SCG	Provider	Count	Median LOS
NW	**Salford Royal NHS Foundation Trust**	14	9
YH	**Leeds Teaching Hospitals NHS Trust**	22	9
YH	**Sheffield Teaching Hospitals NHS Foundation Trust**	11	8
EM	**Nottingham University Hospitals NHS Trust**	29	9
WM	**University Hospital Of North Staffordshire NHS Trust**	14	7
WM	**The Royal Orthopaedic Hospital NHS Foundation Trust**	12	9.5
LON	**Royal National Orthopaedic Hospital NHS Trust**	98	12
LON	**Guy's and St Thomas' NHS Foundation Trust**	14	7

SC	**Nuffield Orthopaedic Centre NHS Trust**	33	8
SW	**Taunton and Somerset NHS Foundation Trust**	25	11
SW	**North Bristol NHS Trust**	20	7
	Other <10	70	8
	Total	**363**	**9**

(Note: FCEs with no length of stay information & emergency method of admission excluded).

[i] Source: Hospital Episodes Statistics, The Information Centre for Health and Social Care, see www.hesonline.nhs.uk.

[ii] This data has been developed over a period of time, exploring the data available within HES inpatient dataset. Although care has been taken to include all relevant codes, due to the sheer volume of potential coding patterns, this report cannot claim to be exhaustive. Local commissioners should consider the codes used alongside local information and adapt appropriately.

[iii] Section I includes all FCEs with a patient classification of 1 or 2. No other exclusions apply.

[iv] Patients with secondary diagnoses indicating cauda equina, malignant spinal tumours or infection were excluded.

[v] Section II includes all FCEs for patients aged 18+ (except where specified), who were not recorded as private patients. FCEs with an unknown method of admission, maternity admissions and those with no age details were excluded.

[vi] Includes all cases not admitted as an emergency or elective (admission method 81-89 & 98).

[vii] Patients with neck pain are excluded from the rest of this section and the section on injections (diagnosis codes G549, G952, M257, M471, M500, M501, M502, M503, M508, M509). They are included in the surgery section.

[viii] Mohammed MA, Rathbone A, Myers P, et al. (2004) An investigation into general practitioners associated with high patient mortality flagged up by through the Shipman inquiry: retrospective analysis of routine data. BMJ; 328:1474–7.

[ix] The types of surgical procedures undertaken have been defined by taking into account all procedure codes. FCEs are allocated to groups based on the grouping order given. Cervical spine: decompression +/- fusion = one of the following OPCS procedure codes in any position: V221, V222, V228, V229, V294, V295, V296, V298, V299, V223, V291, V238, V226, V227, V225, V378, V292. Cervical spine: cervical disc replacement = one of the following OPCS procedure codes in any position V361 . Revision lumbar fusion = one of the following OPCS procedure codes in any position: V393, V394, V395, V396, V397, V398, V399, V263, V261. Primary posterior lumbar fusion = one of the following OPCS procedure codes in any position: V382, V383, V384, V385, V386, V388, V389, V253, V411, V251, V418. Anterior lumbar fusion= one of the following OPCS procedure codes in any position: V333, V334, V335, V336, V343. Lumbar primary decompressions and discectomies = at least one of the following OPCS procedure codes in any position: V528, V252, V254, V255, V256, V258, V259, V331, V332, V337, V338, V339, V671, V672, V351, A578, V493, V278, A579. Revision lumbar decompression: V347, V265, V264, V348, V266, V262, V682, V341, V269, V349, V268, V342, V681. Lumbar disc replacements = one of the following OPCS procedure codes in any position: V363, V368, V369. Flexible stabilisation = one of the following OPCS procedure codes in any position: V401. Interspinous process distraction devices = one of the following OPCS procedure codes in any position V281, V282, V288, V289. Miscellaneous: V548, V242, V498, V472, V344, V542, V304, V271, V248, V272, V224, V473, V231, V408, V233, V541, V413, V319, V273, V313, V372, V241, V499, V524, V679, V409, V312, V543, V345, V318, V377, V478, V391, V306, V414, V301, V458,V468, V375, V279, V358, V471, V232, V376, V311, V443, V346, V491, V352, V381, V245, V479, V267, V392, V305, V419, V257, V432, V293, V433, V379, V492, V243, V359, V239, V496, V428, V438, V549, V678, V234, V244, V249, V529, V309, V235, V371.

[x] Throughout this report, low cell counts have been replaced with *. Where it is possible to calculate low cell counts from column or row totals, other cells have also been replaced with *.

[xi] Cases with a secondary diagnosis of cauda equina were excluded. Care has been taken to avoid including FCEs with spinal tumours within other need groups, however, a small number of patients with benign primary tumours as a secondary diagnosis code are included within the other need groups.

[xii] Patients with secondary diagnoses indicating cauda equina were excluded.

[xiii] Patients with secondary diagnoses indicating cauda equina, malignant spinal tumours or infection were excluded.

[xiv] National Spinal Cord Injury Strategy Board (2011) Management of People with Spinal Cord Injury- NHS Clinical Advisory Groups Report. www.mascip.co.uk/Core/DownloadDoc.aspx?documentID=6164

[xv] Patients with secondary diagnoses indicating Cauda Equina, malignant spinal tumours or infection were excluded.