Trauma Programme of Care: NHS England

National Low Back and Radicular Pain Pathway 2017

Including Implementation of NICE Guidance NG59

Approved by the Spinal Services CRG

30 June 2017

NICE Endorsement Statement:

This care pathway supports implementation of recommendations in the NICE guideline on low back pain and sciatica.

National Institute for Health and Care Excellence, June 2017

Contents

Summary

The NHS England Pathfinder Projects were established in 2013 to address high value care pathways which crossed commissioning and health care boundaries e.g. from general practice through primary care and community services and into secondary care. The Pathfinder Projects were designed for all stakeholders to work collaboratively to develop commissioning structures across the whole pathway. The Pathfinder Project for the Trauma Programme of Care Board was low back pain (LBP) and radicular pain. This is a high value care pathway in view of the very large number of patients involved.

LBP is extremely common and is the largest single cause of loss of disability adjusted life years, and the largest single cause of years lived with disability in England (Global Burden of Disease, 2013). In terms of disability adjusted life years lost per 100,000, LBP is responsible for 2,313. By contrast the remainder of musculoskeletal complaints counts for 911, depression 704 and diabetes 337. It should be borne in mind that this is principally occurring in people of working age, or with families.

UK specific data shows that LBP was the top cause of years lived with disability in both 1990 and 2010 – with a 12% increase over this time. DALY loss between 1990 and 2010 has increased by 3.8% to 3,002/100,000 (95% CI 3,188 to 5,338). In other words, 3% of the population's life is being lost to LBP. Total DALY loss from illness in 2010 was 27,163/100,000 (down from 31,842 in 1990). Thus, LBP accounts for 11% of the entire disability burden from all diseases in the UK; furthermore the burden is increasing both absolutely (3.7% increase) and proportionally (7% to 8.5%).

In CG88 NICE estimated that the cost of LBP to the NHS in 2008 was £2.1 billion. The same analysis estimated that the societal cost of informal care and production loss was £10.7 billion in 1998. Overall, LBP is one of the most costly conditions for which an economic analysis has been carried out in the UK and this is in line with findings in other countries.

The pathfinder project had three goals.

1. To produce a generic pathway for the management of LBP and radicular pain in adults, from the general practitioner's surgery to specialised care, agreed by all Stakeholders.
2. To use this pathway of care as the basis for collaborative commissioning between CCGs, Area Teams and NHS England Specialised Services.
3. To construct a commissioning vehicle with specifications, uniformly trained personnel and access policies which will permit introduction of new evidence in a straightforward way.

A Clinical Group was formed with accredited representatives from each of the stakeholders in the diagnosis and management of LBP and radicular pain. The Clinical Group worked with existing evidence and guidelines and did not itself undertake any evidence reviews. One objective of the project was to provide a commissioning vehicle by which future advice could be implemented in a simple and straight forward fashion. The pathway, agreed by all 30 stakeholders, was completed and first published in June of 2014. The pathway has been implemented in many CCGs, and evidence of the effectiveness of the pathway is now available. In December 2016 stakeholder representatives met again to update the Pathway to incorporate the NICE guidance "Low back pain and sciatica in over 16s: assessment and management" (NG59). The Pathway second edition was published in February 2017.

The Pathway

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The pathway is entirely generic. No speciality or sub-speciality is included as such, but rather the competencies and skills of the Health Care Professional at every stage are identified and defined. The pathway is based on the needs of the patient at every point and on the structures of the services that might meet these needs. It was acknowledged that throughout England, many different services and many different pathways of care exist and so implementation of the National Pathway would be a decision for the CCGs, taking into account services and provision within their commissioning area.

The specialist triage practitioner plays a core role in this pathway. This role could also be termed triage and treat practitioner. This advanced practitioner is highly trained and has significant skills and competencies (appendix 2). The specialist triage practitioner provides the continuity of care, which so many patients have expressed is lacking in many current systems. This practitioner has a major role in triage including the identification and the investigation of radicular pain, the identification and management of emergency conditions such as cauda equina syndrome, urgent “red flags”, and the triage of inflammatory disorders.

The pathway and guidance includes points of measurement at every stage with recommended PROMS and capacity for PCOMs (Appendix 3). This facilitates impact assessment, audit of implementation and governance.

Objectives of the Pathway

- Identification of serious pathology, so called “red flags”, and appropriate management.
- Fast track treatable specific pathology such as a prolapsed intervertebral disc.
- Provision effective and expeditious treatment for non-specific LBP.

The key features of the pathway are:-

- Retraining of health professionals to de-medicalise non-specific LBP.
- To produce a standardised patient literature.
- To use the Keele University STarT Back screening tool to stratify non-specific LBP according to prognostic risk and to triage to appropriate treatment.
- The specialist triage practitioner will provide continuity and will manage the pathway from the general practitioner to referral, if necessary, into secondary care. The specialist triage practitioner will perform assessment and manage patients using CBT principals.
- Patients will be offered an appropriate treatment package of core therapies which includes group exercise with or without manual therapy and/or a low intensity combined physical and psychological programme (CPPP).
- To offer a comprehensive multi-disciplinary CPPP to patients failing to sustain sufficient improvement from core therapies.
- To ensure that patients with axial back pain are formally assessed with the expectation of undertaking a full spectrum of conservative treatments, including comprehensive multidisciplinary CPPP before referral for consideration of invasive procedures (e.g. spinal surgery or radiofrequency denervation).
- For acute radiculopathy to provide rapid access to MRI (or CT if contraindicated) and reports at the request of a specialist triage practitioner by a specifically commissioned mechanism.
- To provide rapid access to a booked epidural or nerve root block at the request of the specialist triage practitioner by a specific commissioned service.
- To provide rapid access to a reserved outpatient slot in secondary care (surgical or pain management) at the request of the specialist triage practitioner through a specifically commissioned mechanism.

- No x-rays of the lumbar spine to be undertaken by general practitioners or other practitioners for back or radicular pain.
- No direct access to MRI scans by general practitioners with the exception of “red flags”.
- To de-commission treatments which are recommended against by NICE 2016 such as, acupuncture, therapeutic injections for back pain including facet joint injections, TENS and other treatments.

Implementation.

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The Trauma Programme of Care Board inaugurated the Improving Spinal Care Project in January 2016 with Clinical champions, a project manager and a project officer. The process of implementation is focussed on the CCGs. A pilot project supported by the Cumbrian and North East Academic Health Science Network, had been established in South Tees and Hambleton and Richmond CCGs in July of 2015. Further impetus was provided in the North East when the 14 Northern CCGs signed up to a Scaling up Project with support from the Health Foundation to roll out implementation of the pathway in the North East. Further implementation is now going forward as part of the Vanguard Project in Liverpool and the North West, in Birmingham and in a number of small groups of CCGs nationwide. At the present time 30 percent of CCGs in England have down loaded the implementation pack and 15 percent are actively implementing the pathway.

The implementation is based on a franchise model. With support of the Health Foundation a number of generic instruments have been produced, these include a generic business case, value impact assessment, cost saving calculator, training support for triage and treat practitioners and other practitioners, IT support, step by step guide and a Q and A resource. These have been uploaded to the website of the United Kingdom Spine Societies Board (UKSSB) and are freely available for download http://ukssb.com/pages/Improving-Spinal-Care-Project/National-Backpain-Pathway.html

With the National Resource and the documents indicated above being available, this has simplified the roll out of the National Back Pain and Radicular Pain Pathway very considerably. At the present time the Southern Region is considering implementation in the whole of the Region.

The four core steps to implementation

1. Articulate the purpose of the Pathway

- Implement Evidence Based Pathway
- Expedite Effective Treatment
- Reduce Inappropriate Referrals to Secondary Care
- Eliminate Ineffective Therapies
- Reduce Case-mix Variation
- Address Surgical Waiting Times
- Drive up Quality of Care
- Improve Patient Outcomes and Satisfaction

2. Adapt to Local Circumstances

- Evaluate Existing Services
- MSKS Triage
- CATS
- Single Point of Entry
- Community Services
- Hospital Providers
  - NHS
  - AQP

3. Building the Team

- Project Manager
- CCG Leads
- Provider Leads
- Clinical Champions

- Community Services
- Primary Care
- Secondary Care

- CSU

4. Stakeholder Engagement

•GP protected learning time
•IT support for templates and database
•Training for T&TP
• Comprehensive multi-disciplinary CPPP
•Who? How? When? Where?
•AQP
•CCG Finance and CSU

Results of Pathway

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The National Back Pain and Radicular Pain Pathway carries with it substantial benefits. At the present time spinal surgical waiting lists are under extreme pressure and a number of small centres have withdrawn from the provision of spinal services. The resulting increased pressure on the major spinal centres has resulted in a number of these closing their waiting lists to new entries and closing to new outpatient referrals.

Closure of smaller spinal centres has also caused a substantial pressure on the major spinal centres in terms of emergency provision.

Substantial delays are experienced by patients in their management and many patients are referred on a number of occasions in what resembles a “pin ball” management pathway. The delays and provision of inappropriate treatments leads to failure to improve and substantially increased risk of chronicity.

The implementation in the North East has indicated significant reduction in community physiotherapy, x-rays and MRI scanning and in referrals into secondary care. However, the most important has been in the improvement of patient management. The observed reduction in secondary care referrals is a reflection of improved patient management and reduction of pain and disability which would drive referral in the past.

Benefits realisation - Generic CCG; Population 300,000

Year 1
Total Potential Injection Savings £137,100.60
Total anticipated savings for Year 1 (including imaging (50%) and Physiotherapy activity reduction) = £202,560.63

Year 2
Total Potential Injection Savings £58,028.88
Total Potential Surgery Savings £306,653.81
Total anticipated savings for Year 2 (+ Year 1 savings. Including imaging and core physio) = £666,452.90

Year 3
Total Potential Injection Savings £45,046.64
Total Potential Surgery Savings £195,093.66
Total anticipated savings for Year 3 (+ Year 2 savings. Including imaging and core physio) = £1,005,802.79

Benefits realisation, Net

Additional Investment and savings	Current Service	T&T and CPPP (14 pa)
Investment	No additional funding required	Year 1- £204,248 Year 2 - £179,297 Year 3 - £179,297
Savings	Year 1 - £100,000 Year 2 - £150,000 Year 3 - £175,000	Year 1 - £202,561 Year 2 - £666,453 Year 3 - £1,005,803
Total Net Savings	Year 1 - £100,000 Year 2 - £150,000 Year 3 - £175,000	**Year 1 - -£1,687** **Year 2 - £487,155** **Year 3 - £826,505**

Clinical Results

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The implementation of the pathway in South Tees and Hambleton and Richmond CCGs has been evaluated independently by the North East Quality Observatory (NEQOS).

In this trial implementation of the pathway in the North East 2,744 patients presenting to the Triage and Treat practitioners and 594 (22%) were directed to core therapies.

The scoping for this service was based on one specialist triage practitioner (T&T) per 50,000 population and ten attenders at the comprehensive multi-disciplinary CPPP per 100,000 per annum (see pyramid of care).

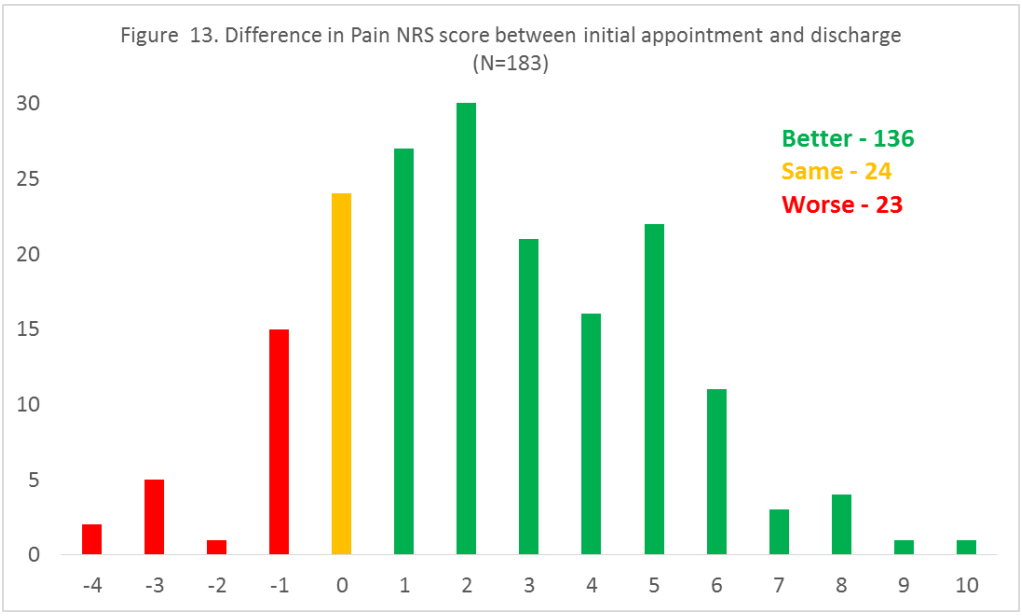


Fig 1. T&T database - Change in Pain NRS

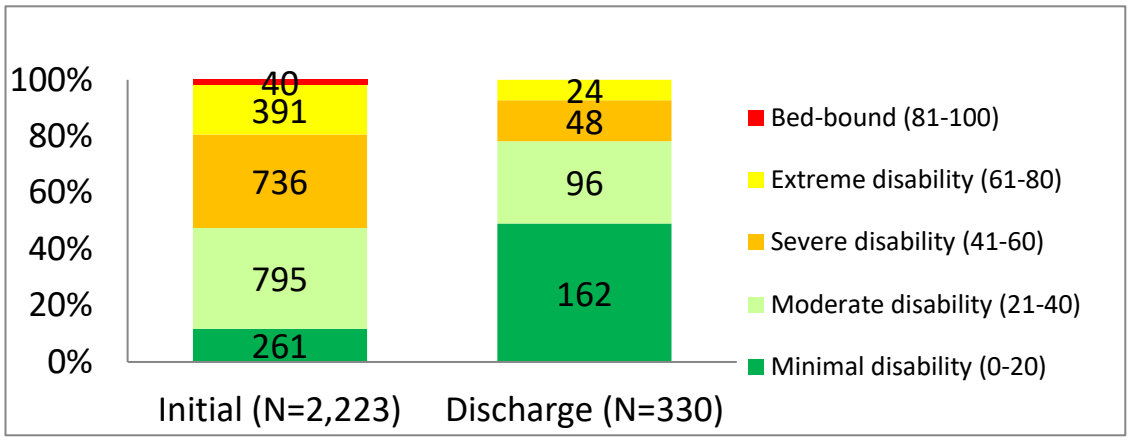
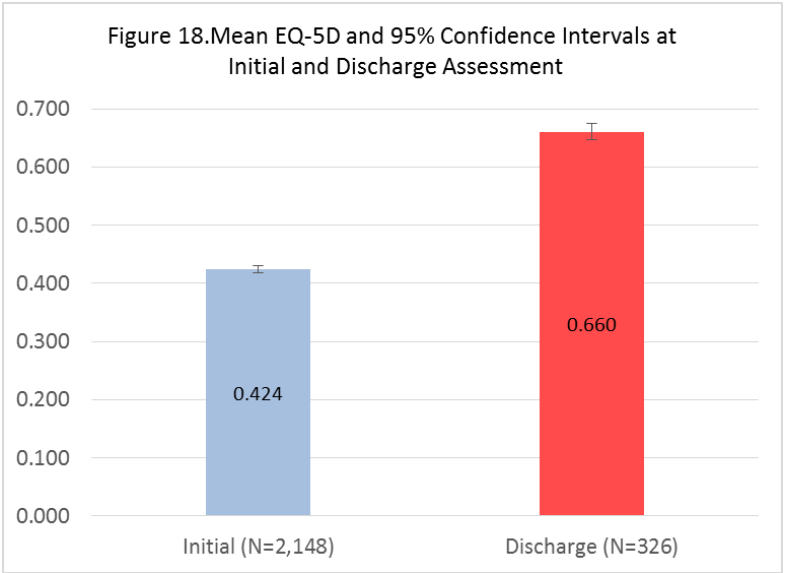


Fig 2. T&T database – ODI Scores



Increase 0.24, NICE cut-off 0.04

Fig 3. EQ-5D Improvement

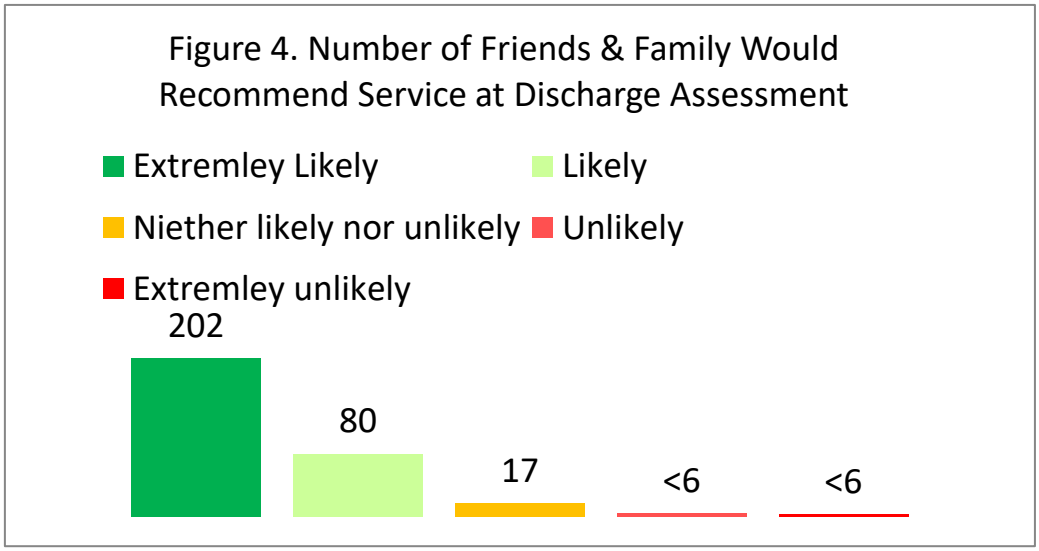


Fig 4. Friends and Family Test

Significant improvements in pain, disability and mental health have been observed together with an improved confidence in self-management and very high satisfaction ratings on the friends and family test.

Pyramid of Care

In a separate study performed in a GP practice in a CCG in the North East there were 2,984 first appointments for low back pain. The first appointment was defined either as the first ever attack reported of low back pain or, more commonly, the first presentation of a recurrent episode of low back pain. 1,455 second appointments for the episode were observed, a reduction of 52%.

The initial findings of the Start back study indicated that approximately 40 percent of patients fell into the low risk category and could be satisfactorily managed with information and counselling on CBT principals from the Health Professional of first contact. In the North East Back Pain pathway, patients falling into the medium and high risk categories are referred on to the Triage and Treat Practitioner.

In the trial implementation of the pathway in the North East, of 2,744 patients presenting to the Triage and Treat practitioners 594 (22%) were directed to core therapies. Of these, 32 (5%) were referred for consideration of participation in the comprehensive multi-disciplinary programme (representing a rate of referral of approximately 10 per 100,000 population per annum).

Thus, in addition to being constructed on evidence based principals, the low back pain pathway may be seen to be a very effective management system for providing care matched carefully to the needs of the patient. The structure of the pathway is such that patients may reach the point of referral to the apex of the pyramid between 18 and 20 weeks from contact. Substantially reducing the duration of the pathway of care may reduce the risk of some patients developing chronicity and prolonged disability.

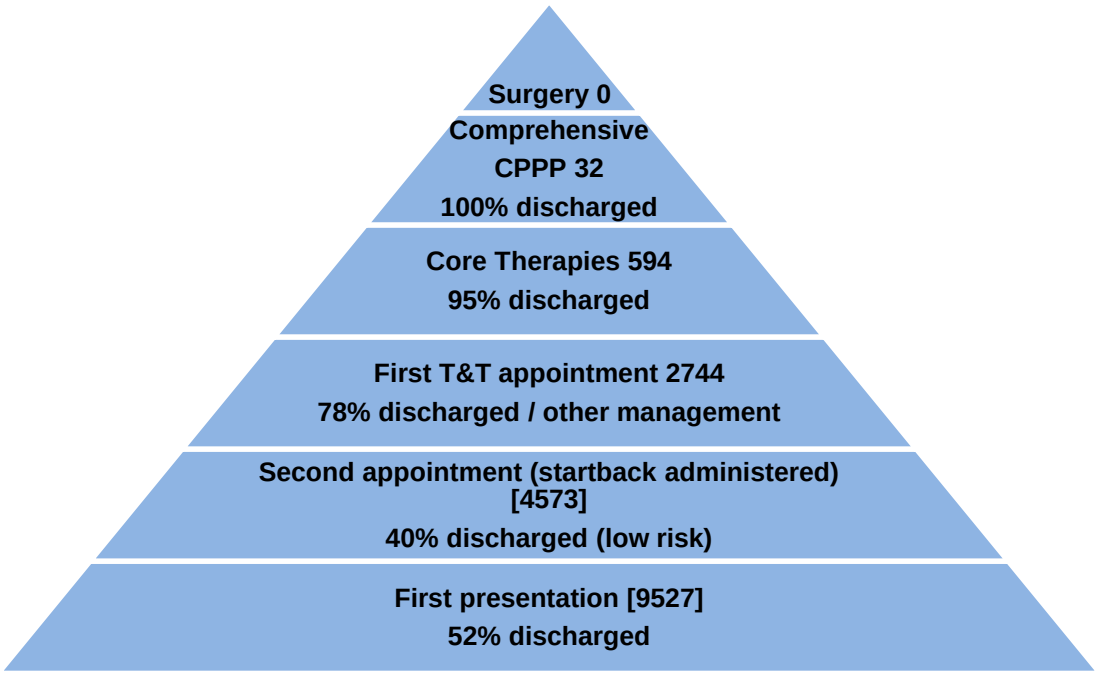


Fig. 5. The National Back Pain Pathway as a pyramid of care. [ ] Patient numbers in the First presentation box and the Second Appointment box have been back calculated from the observed data in the First T&T appointment box, using the percentage discharge rates shown.

Comprehensive multi-disciplinary CPPP

The First 6 Programs –

- 65 referrals, 49 attenders
  - Unable to afford time off – 2
  - Child care – 1
  - Family Illness
  - Anxiety
  - Unable to contact
  - Preferred different treatment

	NICE target	Results	
EQ5D	0.04	↑ 0.21	p<0.05
Pain VAS	1.0	↓ 1.4	p<0.05
ODI	10	↓ 7.5	p<0.05
GAD7	n/a	↓ 4.9	p<0.05
pHQ9	n/a	↓ 6.2	p<0.05
Coping	n/a	↑ 2.3	p<0.05

Self Management 6/10

Fig 6. Results of first 6 programmes

GP templates have been developed for implementing the pathway, at present in System1 and Emis. These relate to new and recurrent presentations of back pain. A template is available for the initial and for the second consultation. The Start Back questionnaire is available and automatically calculates the score. Data from the template may be uploaded to choose and book.

Data collection in the wider NHS at present is segregated, with patient identifiable data separately streamed to non-identifiable data used for contracting. This is the major barrier to outcome based commissioning, or commissioning for value (Fig 7).

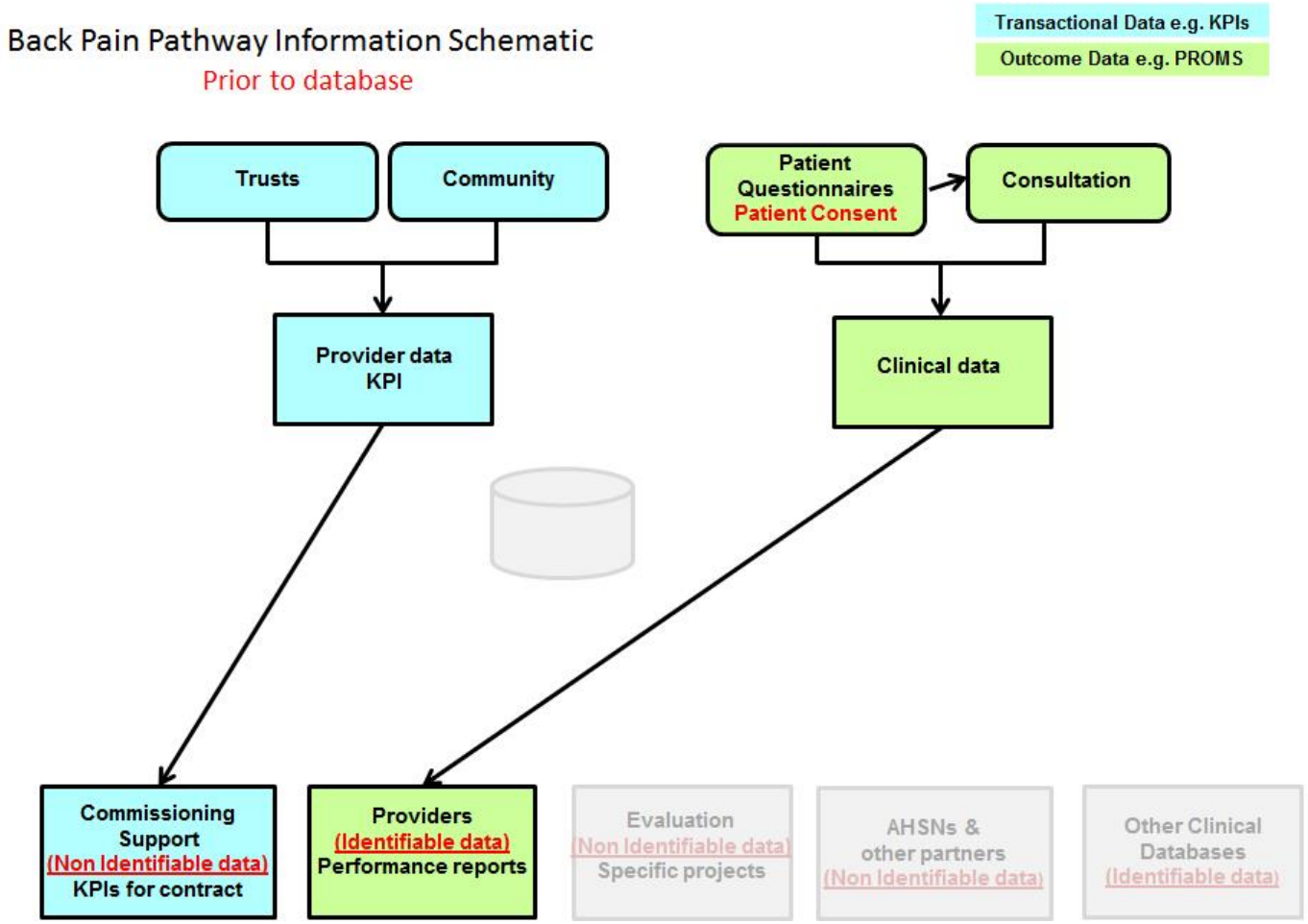


Fig 7. Current data collection for back pain

A database has been developed in association with the implementation of the National Back Pain and Radicular Pain Pathway (Fig 8). A sister pathway, the North of England Regional Pathway, is being rolled out to the fourteen CCGs in the North of England with the assistance of a grant from the Health Foundation. The evaluation element of this grant has led to construction of a database which provides both transactional and patient outcome data.

An app installed on the GP template (e.g. System 1) allows GP to take patient consent and then forward the demographic details to the database with a single click. The database then allows the patient to *directly* enter PROMs, satisfaction ratings and other assessments. The providers enter both clinical and operational data. As the database is hosted on the N3 network, this data may be patient

identifiable and therefore reconcilable with the patient outcomes data. Patient identifiable data is available to individual clinicians to support clinical management.

The database is able to produce anonymised reports for commissioners, but including outcome and satisfaction data, making it possible to truly commission for quality. Other data outputs allow the scientific evaluation of the pathway, and audit and governance requirements (Fig 7&8).

The value of such systems can be expressed as a ratio between data put in (cost) and the information extracted (benefit), the lower the ratio the more cost effective the system. In the above systems careful consideration of design strategies has reduced the data input burden, whilst ever growing outputs increase the benefit. This database is live now, collecting data and providing information.

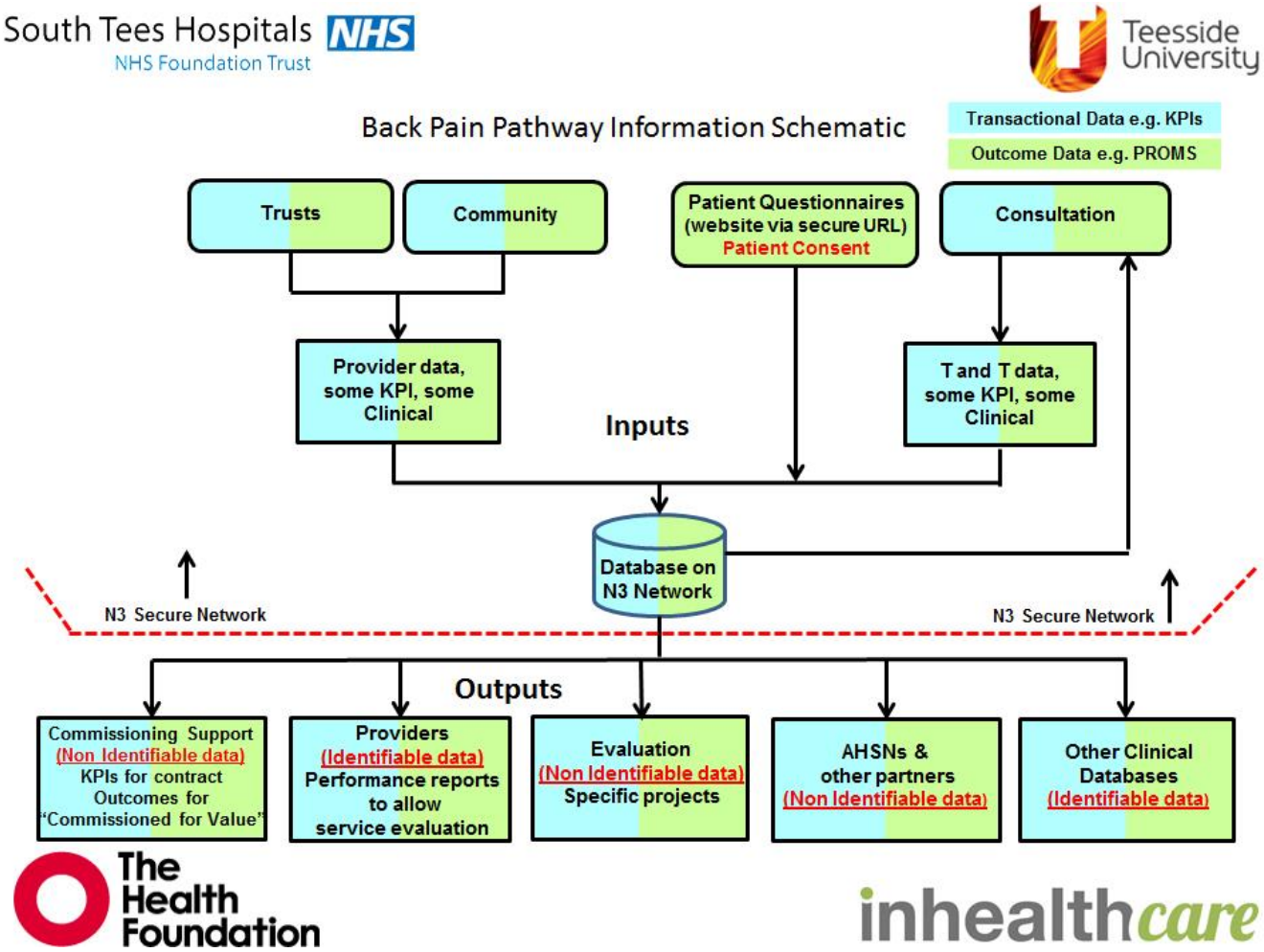


Fig 8. New data collection for back pain

Further information may be obtained from Inhealth care (www.inhealthcare.co.uk/national-digital-health-platform/)

Implementation in the Future

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Implementation will continue as a national programme overseen by the NHS England Trauma Programme of Care and the Spinal Services Clinical Reference Group (CRG). The CRG Chair and Accountable Commissioner will work with the STPs to ensure that the CCGs can see the benefits of adopting the National Pathway. The Improving Spinal Care Project and implementation of the Pathway to date has produced many modifications to the franchise model which is now easier to use and more

robust. This will of course be available to CCGs looking to implement the Pathway. We are currently looking at mechanisms to monitor the Pathway which we hope will continue to show its value and results will be circulated to the STPs and CCGs. Once Regional Spinal Networks are established they will be able to exert influence over areas within their region where the Pathway has not yet been adopted.

Quality Dashboards

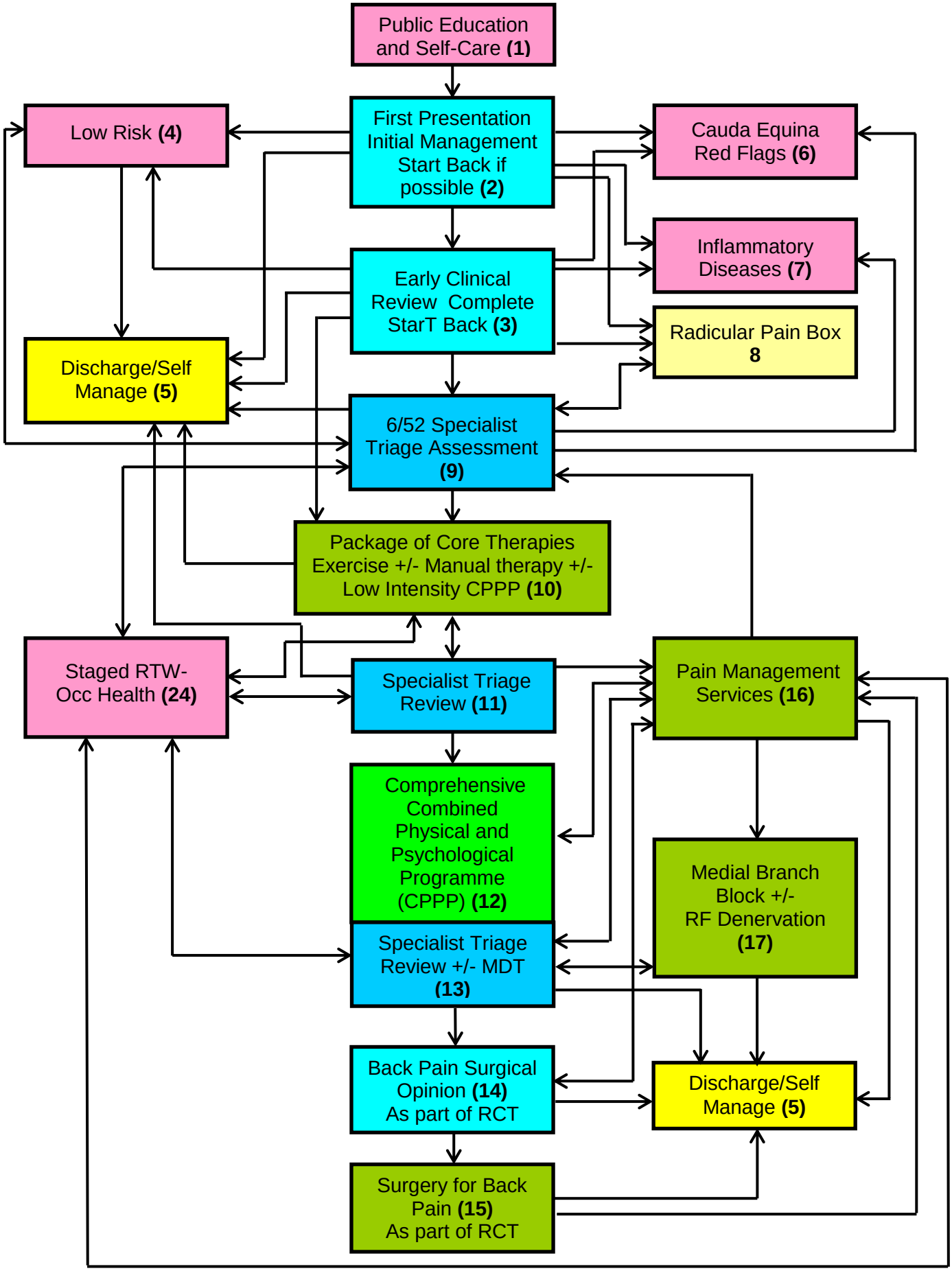
The Royal College of Surgeons of England, in collaboration with the Surgical Speciality Associations, NHS England and Right Care, have developed some valuable data tools. Quality Dashboards by CCGs are available, as are Explorer Tools for procedures by provider. These may be accessed at:

http://www.rcseng.ac.uk/healthcare-bodies/nscc/data-tools

References

Murray CJL, Richards MA, Newton JN et al. UK Health Performance: findings of the Global Burden of Disease Study 2010. www.thelancet.com Vol 381:997-1020, March23 2013.

http://ukssb.com/pages/Improving-Spinal-Care-Project/National-Backpain-Pathway.html


Public Education and Self-Care (1)
First Presentation Initial Management Start Back if possible (2)
Low Risk (4)
Cauda Equina Red Flags (6)
Inflammatory Diseases (7)
Early Clinical Review Complete StarT Back (3)
Radicular Pain Box 8
Discharge/Self Manage (5)
6/52 Specialist Triage Assessment (9)
Package of Core Therapies Exercise +/- Manual therapy +/- Low Intensity CPPP (10)
Staged RTW- Occ Health (24)
Specialist Triage Review (11)
Pain Management Services (16)
Comprehensive Combined Physical and Psychological Programme (CPPP) (12)
Medial Branch Block +/- RF Denervation (17)
Specialist Triage Review +/- MDT (13)
Back Pain Surgical Opinion (14) As part of RCT
Discharge/Self Manage (5)
Surgery for Back Pain (15) As part of RCT

Radicular Pain Pathway Flowchart

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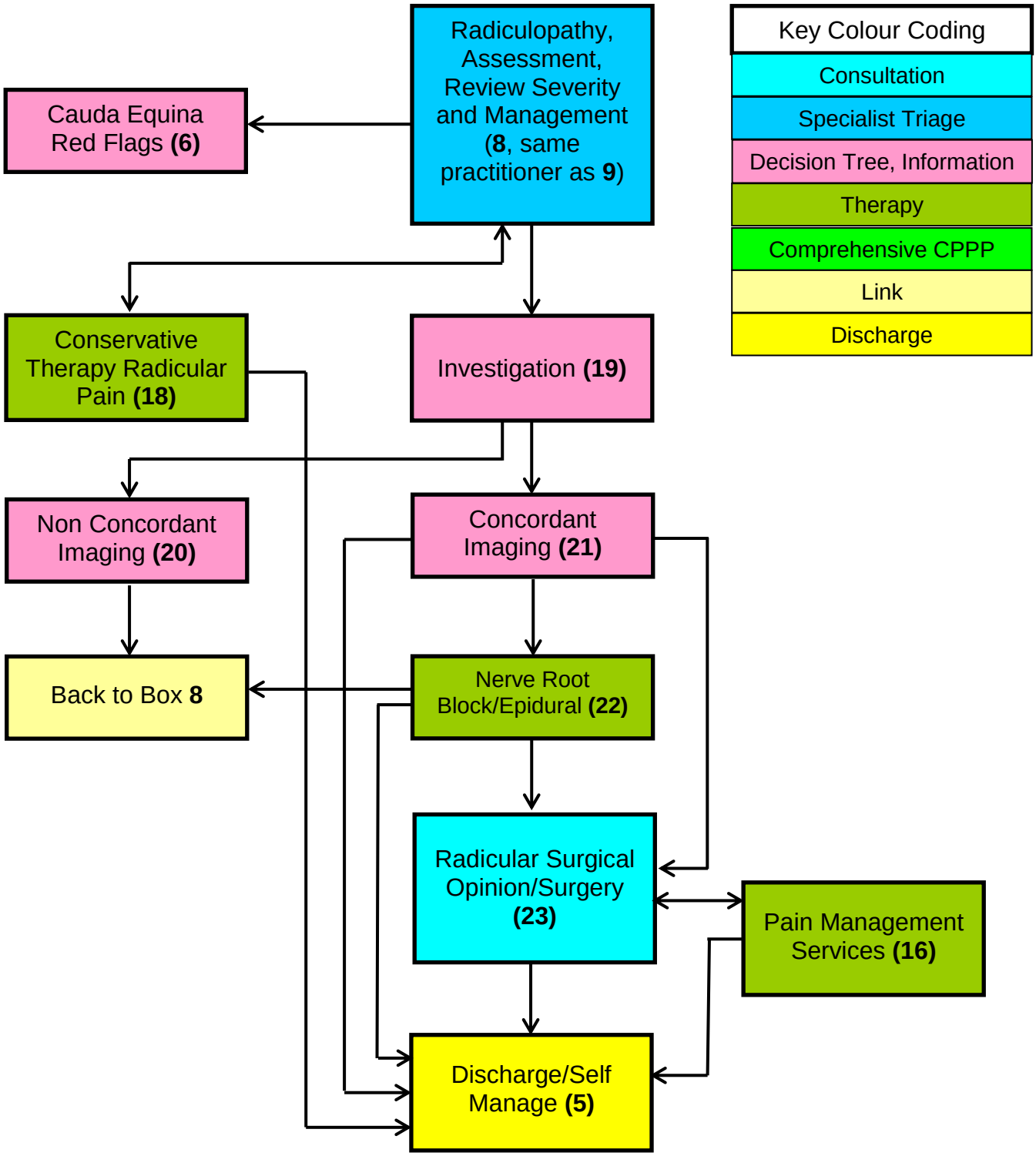

- Provision of time line.
    - Material in Public Domain

Low Back Pain and Radicular Pain

Low back pain is soreness or stiffness in the back, between the bottom of the rib cage and the top of the legs. Most people's low back pain is described as 'non-specific'. That means the pain is unlikely to be caused by an infection, a fracture or a disease like cancer.

Some people also get back symptoms radiating down one or both legs (radicular symptoms/sciatica). Radicular symptoms are caused, when the nerves from the back, are irritated causing pain, numbness or tingling down the leg.

This pain, may vary from mild to severe, may be related to or triggered by a particular movement or action or it may be spontaneous. Most people will tend to suffer from back pain at some point in their lives and indeed it may recur. Most back pain usually improves enough within few days to few weeks, to be able to return to normal activities.

For such pain, it is best to continue with normal activities as much as possible, although you may need to return to them in stages, as the back pain steadily recovers. Getting back to work helps your recovery and employers will often arrange lighter duties to get you back sooner. Continuing with normal life as much as you can helps to take your mind off the pain and avoid you getting stiff and weak. Rest lying down, only when that's the only way to stop pain building up. Complete or prolonged bed rest is not advised at all as it is associated with delayed recovery.

If needed, simple analgesics (pain killers) help people with back pain or radicular pain keep active. Many of these are available over the counter. If advice is required then the local pharmacist or GP can help. NICE 2016 recommend to:

- Consider oral non-steroidal anti-inflammatory drugs (NSAIDs) for managing low back pain, taking into account potential differences in gastrointestinal, liver and cardio-renal toxicity, and the person's risk factors, including age.
- When prescribing oral NSAIDs for low back pain, think about appropriate clinical assessment, ongoing monitoring of risk factors, and the use of gastro protective treatment.
- Prescribe oral NSAIDs for low back pain at the lowest effective dose for the shortest possible period of time.
- Consider weak opioids (with or without paracetamol) for managing acute low back pain only if an NSAID is contraindicated, not tolerated or has been ineffective.

NICE 2016 recommend against:

- Do not offer paracetamol alone for managing low back pain.
- Do not routinely offer opioids for managing acute low back pain (see recommendation 24).
- Do not offer opioids for managing chronic low back pain.
- Do not offer selective serotonin reuptake inhibitors, serotonin–norepinephrine reuptake inhibitors or tricyclic antidepressants for managing low back pain.
- Do not offer anticonvulsants for managing low back pain where there is no neuropathic component.

When to seek medical help

You should seek early advice from your GP if the low back pain does not respond to the measures described above, gets worse and certainly if it does not improve after six weeks. If you are on steroid medication, are at risk of osteoporosis or experience unsteadiness when you walk you should also contact your doctor.

Rarely, your back pain may be accompanied by the following:

- Difficulty passing or controlling urine, urinary incontinence
- Numbness/ loss of sensation around your back passage or genitals
- Numbness/loss of sensation, pins and needles, or weakness in both legs

Then you need to seek advice or attend A&E as soon as possible**.**

- Link to other source of advice
    - For further information, you may also refer to the following sources:
        - www.nice.org.uk/guidance/ng59/ifp
        - The Back Book
        - www.backcare.org.uk/aboutbackpain
        - NHS Choices website www.nhs.uk/pages/home.aspx

- Evidence base and its level of evidence.
    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence.
    - NICE CG173 Neuropathic pain in adults: pharmacological management in non-specialist settings (2014) https://www.nice.org.uk/guidance/cg173

Box 2 - First Presentation and Initial Management

Contents Flow Chart

Overview

Patients may present to a number of services complaining of back pain with or without leg pain. The possible services will depend on what is commissioned locally but may include:

- GP
- Self-referral to a Chiropractor, Osteopath or Physiotherapist
- 111 telephone service

Many GP surgeries are increasingly utilising telephone assessments (such as Doctor First or similar) as a first line management approach. The new 111 service in England explicitly utilises this approach by means of an assessment process within NHS Pathways linked to a detailed "Directory of Services" if a face to face assessment is considered appropriate. Physio Direct, a telephone assessment and advice service which began in 2001, may also be available locally.

- Provision of time line
    - From day of onset of symptoms to a number of days or weeks after the initial onset. Patients may present after experiencing their first ever episode of back pain and associated leg pain or may seek help after recurrent episodes.

- Definition of skills / competencies required
    - Essential competences
        - Clinical screening for serious pathologies: cauda equina syndrome, tumour, infection, major neurological deficit, osteoporotic collapse, inflammatory disease
        - Diagnosing radicular pain, neurogenic claudication, spinal deformity and non-specific low-back pain
        - Identification of patients with good prognosis who can self-manage

    - Essential Skills
        - Clinical examination of the spine, surrounding structures and neurology for face to face contacts
        - Communication of diagnosis and prognosis
        - Shared decision making
        - Expectation management
        - Delivery of appropriate advice and sign posting
        - Promotion and facilitation of work return or retention

    - Essential Telephone Skills
        - Listening skills - sensitivity to identify and manage emotion, intuition to pick up unspoken cues, evaluating the capability of the patient.
        - Visualisation - synthesis of auditory information to create a picture of the patient's problem.
        - Communication - Use of voice to reassure and inspire trust, Adapt tone of voice to match the situation, Delivery of clear information, Assertiveness to guide the interview.

- Link to other source of advice
    - Community education and self-care (Box 1)
    - Low risk self-management (Box 4 & 5)
    - Red flags and cauda equina (Box 6)
    - Rheumatology (Box 7)
    - Specialist triage Service (Box 9)

- Entry criteria
    - Patient with back and/or leg pain

- Exit Criteria
    - Concerning red flags or cauda equina syndrome
    - Potential inflammatory disease
    - Non-spinal presentation
    - Choice: Self-Management

- Essential referral information
    - Patient self-referral

- Patient Assessment
    - Red Flags, including cauda equina syndrome (see box 6).
    - STarT Back Tool on first presentation if possible.
    - Back pain history, management and outcome.
    - Episode history and progress.
    - Pain severity and % back and leg pain.
    - Impact on family, social and work ability.
    - Observation of spine, lower limbs, gait, pain behaviour for face to face contacts.
    - Neurological examination for face to face contacts.
    - Imaging is NOT routinely needed in a non-specialist setting.

- Shared Decision Making / Patient Choice
    - Self-manage (Box 5) (likely low risk STarT Back scores)
    - Radicular Pain (Box 8)
    - Early clinical review (Box 3)

- Interventions
    - Advice and information.
      Provide people with advice and information, tailored to their needs and capabilities, to help them self-manage their low back pain with or without radicular pain, at all steps of the treatment pathway. Include:
        - information on the nature of low back pain and radicular pain
        - improvement is likely
        - pharmacy advice available
        - encouragement to continue with normal activities
        - stay in work
        - fit note
        - explain to people with low back pain with or without radicular pain that if they are being referred to specialist triage, they may not need imaging.
        - indications for early clinical review and emergency attendance
    - Pain relief
      If needed simple analgesics (pain killers) help people with back pain or radicular pain keep active. Many of these are available over the counter. If advice or prescribing is required then the local pharmacist or GP can help. NICE 2016 recommend to:

        - Consider oral non-steroidal anti-inflammatory drugs (NSAIDs) for managing low back pain, taking into account potential differences in gastrointestinal, liver and cardio-renal toxicity, and the person's risk factors, including age.
        - When prescribing oral NSAIDs for low back pain, think about appropriate clinical assessment, ongoing monitoring of risk factors, and the use of gastro protective treatment.
        - Prescribe oral NSAIDs for low back pain at the lowest effective dose for the shortest possible period of time.
        - Consider weak opioids (with or without paracetamol) for managing acute low back pain only if an NSAID is contraindicated, not tolerated or has been ineffective.

- For severe neuropathic pain NICE (2014) recommend to:
  - Offer a choice of amitriptyline, duloxetine, gabapentin or pregabalin as initial treatment for neuropathic pain (except trigeminal neuralgia) [3].
  - If the initial treatment is not effective or is not tolerated, offer one of the remaining 3 drugs, and consider switching again if the second and third drugs tried are also not effective or not tolerated.
  - Consider tramadol only if acute rescue therapy is needed (see recommendation about long-term use).
  - Consider capsaicin cream [4] for people with localised neuropathic pain who wish to avoid, or who cannot tolerate, oral treatments.

  NICE 2016 recommend against:
  - Do not offer paracetamol alone for managing low back pain.
  - Do not routinely offer opioids for managing acute low back pain.
  - Do not offer opioids for managing chronic low back pain.
  - Do not offer selective serotonin reuptake inhibitors, serotonin–norepinephrine reuptake inhibitors or tricyclic antidepressants for managing low back pain.
  - Do not offer anticonvulsants for managing low back pain where there is no neuropathic component.
  - Do not routinely offer imaging in a non-specialist setting for people with low back pain with or without sciatica.

- Measurement point for quality standard and outcome, PROMS.
  - % completion of STarT Back
  - Reporting of number of missed tumours and cauda equina syndrome, infection, fracture.
  - Appropriate early identification and management of radiculopathy. Review and investigation of cases of delayed referral.
  - Re-consultation rates for simple back pain.

- Self-Management
  - Patient information (Box 1)
  - GP or over the counter medication
  - Self-directed exercise programme
  - Self-directed relaxation techniques
  - Self-directed return to normal social and activities

- Co-morbidity
  - Cardiac
  - Diabetes
  - Mental Health
  - Musculoskeletal (other than back pain)
  - Obesity
  - Neurological
  - Respiratory

- Definition satisfactory result
  - Patient reported improvement
  - Patient choice to self-manage

- Evidence base and its level of evidence.
    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence.
    - NICE CG173 Neuropathic pain in adults: pharmacological management in non-specialist settings (2014) https://www.nice.org.uk/guidance/cg173
    - Royal College of General Practitioners curriculum 2010 revised 14th August 2013: Statement 3.20 Care of people with musculoskeletal problems.
    - Internationally clinical guidelines consistently recommend early clinical assessment including screening of red flags.
    - www.productiveprimarycare.co.uk/doctor-first.aspx accessed 19 Mar 14
    - www.connectingforhealth.nhs.uk/systemsandservices/pathways accessed 19 Mar 14

Box 3 - Early Clinical Review

Contents Flow Chart

Overview

Early clinical review is likely to be done by a primary care clinician such as a GP, Chiropractor, Osteopath or Physiotherapist. The clinician will reflect what is commissioned locally. Important functions of early clinical review are; early identification of emergency and urgent presentations, early identification of severe radicular pain and optimisation of pain control.

- Provision of time line.
  - No later than 2 weeks from initial presentation

- Definition of skills / competencies required
  - Essential competences
    - Good communication skills
    - Clinical screening for serious pathologies: cauda equina syndrome, suspected cancer, infection with constitutional features, major neurological deficit, osteoporotic collapse, inflammatory disease, spinal injury
    - Referring emergency symptoms suggestive of cord or cauda equina compromise
    - Diagnosing radicular pain, neurogenic claudication, spinal deformity and non-specific low-back pain
    - Assessment of severity of symptoms – tolerable/non-tolerable
    - Advise patients on the appropriate use of pain relief and pain-modifying medications and other pain management strategies
    - Assess and advise patients on the appropriateness of remaining in work
    - Identification of patients with good prognosis who can self-manage

  - Essential Skills: Ability to:
    - Undertake a bio-psychosocial assessment of the patient
      - clinical examination of the spine
        - lower limb neurological examination
        - assessment of weakness and long-tract signs
      - Identify potentially modifiable psychosocial factors (yellow flags) for recovery (including prognostic screening using STarT Back Tool).
      - Identify co-morbidities
    - Identify and refer “red flag” pathologies
    - Advise patients with radicular pain, about the signs and symptoms of a developing Cauda Equina Syndrome and what actions that they should take (medical emergency)
    - Communicate diagnosis and prognosis
    - Undertake a pharmacology review and prescribe pain relief
    - Promotion and facilitation of work return or retention
    - Issue fit notes and liaise with the employer as necessary
    - Apply the principles of shared decision making
    - Identify and manage expectations

- Link to other source of advice
  - Community support (Box 1)
  - Bone Biology/osteoporosis service
  - Rheumatology service
  - Spinal on-call service
  - Triage Service (Box 9)
  - Occupational health

- Entry criteria
    - Symptoms or signs of lumbar origin present for > 2 weeks
    - Recurrent episodes of low back pain with or without radicular pain

- Exit Criteria
    - Concerning Red Flags or Cauda Equina Syndrome Box 6
    - Potential inflammatory disease Box 7
    - Non-spinal presentation.

- Essential referral information
    - Medical history and medication
    - Past history of back pain
    - Current pain pharmacology
    - Social and work impact

- Patient Assessment
    - Red Flags, including cauda equina syndrome (see box 6)
    - STarT Back Tool (if not already done)
    - Patient completed body chart
    - Back pain history, management and outcome
    - Episode history and progress
    - Pain severity and % back and leg pain
    - Impact on family, social and work ability
    - Understanding of patient's objectives
    - Observation of spine, lower limbs, gait, pain behaviour
    - Neurological examination
    - Imaging is NOT routinely needed in a non-specialist setting.

- Shared Decision Making / Patient Choice
    - Self-management (Box 5) (likely low risk STarT Back scores)
    - Core therapies (Box 10) (medium or high risk STarT Back scores).
    - Specialist triage assessment (Box 9) (medium or high risk STarT Back scores, severe leg pain, diagnostic uncertainty, or high disability)
    - Radicular Pain (Box 8) – Referral should be regardless of BMI, smoking status and psychological distress.

- Interventions
    - Psychologically informed advice and information.
        - Improvement is likely
        - Stay active including work
        - Pharmacy advice available
        - Fit note
        - Explain and emphasise that imaging may not be needed
        - Indications for early clinical review and emergency attendance

NICE 2016 recommend:

- Consider oral non-steroidal anti-inflammatory drugs (NSAIDs) for managing low back pain, taking into account potential differences in gastrointestinal, liver and cardio-renal toxicity, and the person's risk factors, including age.
- When prescribing oral NSAIDs for low back pain, think about appropriate clinical assessment, ongoing monitoring of risk factors, and the use of gastro protective treatment.
- Prescribe oral NSAIDs for low back pain at the lowest effective dose for the shortest possible period of time.
- Consider weak opioids (with or without paracetamol) for managing acute low back pain only if an NSAID is contraindicated, not tolerated or has been ineffective.

NICE 2016 recommend against:

- Do not offer paracetamol alone for managing low back pain.
- Do not routinely offer opioids for managing acute low back pain (see recommendation 24).
- Do not offer opioids for managing chronic low back pain.
- Do not offer selective serotonin reuptake inhibitors, serotonin–norepinephrine reuptake inhibitors or tricyclic antidepressants for managing low back pain.
- Do not offer anticonvulsants for managing low back pain where there is no neuropathic component.
- Do not routinely offer imaging in a non-specialist setting for people with low back pain with or without sciatica.

- Measurement point for quality standard and outcome, PROMS.
  - % completion of STarT Back
  - Reporting of number of missed tumours and cauda equina syndrome, infection, fracture

- Self-Management
  - Public education and self-care (Box 1)
  - GP or over the counter medication
  - Self-directed exercise programme
  - Self-directed relaxation techniques
  - Self-directed return to work
  - Self-directed return to normal social and leisure activities

- Co-morbidity
  - Co-morbidities should be identified and consideration given to how care may need to be modified. Patients should be referred or signposted appropriately.
    - Cardiac
    - Diabetes
    - Mental Health
    - Musculoskeletal (other than back pain)
    - Obesity
    - Neurological
    - Respiratory

- Definition satisfactory result
  - Patient reported improvement
  - Patient choice to self-manage

- Evidence base and its level of evidence.
  - Internationally clinical guidelines consistently recommend early clinical assessment including screening of red flags.
  - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/full-guideline-assessment-and-noninvasive-treatments-2726158003

Box 4 - Low Risk

Contents Flow Chart

Overview

Intervention for 'low risk' patients is delivered by practitioner in Box 2 (First presentation - Initial management) or Box 3 (Early Clinical Review) following full assessment:

- Provision of time line.
  - At initial presentation or at first review

- Definition of skills / competencies required
  - Essential competences
    - Identification of patients with good prognosis who can self-manage
  - Essential Skills
    - Communication of diagnosis and prognosis
    - Prognostic screening using STarT Back Tool.
    - Shared decision making
    - Expectation management

- Link to other source of advice
  - Community support (Box 1)

- Entry criteria
  - No adverse social and psychological factors
  - Low risk on STarT Back tool
    - IF presentation is mechanical (non-specific) low back pain
    - AND assessing practitioner in agreement

- Exit Criteria
  - Choice: Self-Management

- Essential referral information
  - Assessed by practitioner Box 2 or 3

- Patient Assessment
  - Assessed by practitioner Box 2 or 3

- Shared Decision Making / Patient Choice
  - Discharge / Self-management (Box 5)

- Interventions
  - Advice and information
    - improvement is likely
    - explanation of signs and symptoms
    - distinction between hurt and harm
    - appropriate reassurance about good prognosis
    - advice about regular adequate analgesia
    - pharmacy advice available
    - advice about continuation of normal activities, including work, or return to normal activities using graded steady increases
    - stay active including work
    - simple patient information is provided e.g. NICE NG59 or the Back Book.
    - fit note
    - no onward referral or imaging necessary AND patient in agreement.
    - advice to re-consult if symptoms fail to improve or worsen

        - indications for early clinical review and emergency attendance
        - discharge

- Measurement point for quality standard and outcome, PROMS.
    - Re-consultation rates for simple back pain.

- Self-Management
    - Patient information (Box 1)
    - GP or over the counter medication
    - Self-directed exercise programme
    - Self-directed relaxation techniques
    - Self-directed return to normal social and occupational activities

- Co-morbidity
    - Cardiac
    - Diabetes
    - Mental Health
    - Musculoskeletal (other than back pain)
    - Obesity
    - Neurological
    - Respiratory

- Definition satisfactory result
    - Patient reported improvement
    - Patient choice to self-manage
    - Return to work and normal activities

- Evidence base and its level of evidence.
    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/full-guideline-assessment-and-noninvasive-treatments-2726158003
    - Foster et al. Effect of Stratified Care for Low Back Pain in Family Practice (IMPaCT Back): A Prospective Population-Based Sequential Comparison. Annals of Family Medicine 2014, 12(12): 102-111
    - Whitehurst et al. exploring the cost-utility of stratified primary care management for low back pain compared with current best practice within risk-defined subgroups. Annals of the Rheumatic Diseases 2012, 71(11), 1796-1802
    - Hill et al. Comparison of stratified primary care management for low back pain with current best practice (STarT Back): a randomised controlled trial. Lancet 2011, 378: 1560-71

Box 5 - Discharge / self-management.

- Public education and self-care (Box 1)
- GP or over the counter medication
- Self-directed exercise programme
- Self-directed relaxation techniques
- Self-directed return to normal social and occupational activities

Patient should re-consult if necessary.

Box 6 - Red Flags

Overview

The “red flags” were introduced in 1994 in the CSAG report. They comprise a number of symptoms and signs which have been associated with increased risk of underlying serious conditions. Recently some doubt has been cast on the sensitivity and specificity of the flags but they remain useful shorthand for clinicians to maintain awareness of possible serious pathology. Presence of a significant clinical suspicion of serious disease may lead to either:

- Emergency Spinal Referral
  - Suspected spinal cord neurology (gait disturbance, multilevel weakness in the legs and /or arms)
  - Impending Cauda Equina Syndrome (Acute urinary disturbance, altered perianal and/or genital sensation, (reduced anal tone and squeeze – if circumstances permit)
  - Major motor radiculopathy
  - Suspected Spinal Infection

- Priority Spine imaging (Protocol led MRI whole spine unless contraindicated)
  - Past history of cancer *(new onset spinal pain)
  - Recent unexplained weight loss
  - Objectively unwell with spinal pain
  - Raised inflammatory markers (relative to range anticipated for age) Plasma viscosity , CRP , ESR (according to local practice)
  - Possible immunosuppression with new spinal pain (IVDU, HIV, Chemotherapy, Steroids).
  - Prolonged steroid use *
  - Known osteoporosis, with new severe spinal pain
  - Age <15, or >60 years new onset axial back pain

*Statistically significant red flags. Although the others listed may not be statistically significant these are the symptoms items which are commonly seen in serious pathology. The more of these present the greater the probability of serious underlying pathology

- Provision of Time lines
  - Emergency (Immediate referral anticipating imaging and possible intervention with timing dependent upon findings)
  -
    - Major neurological deficit / Major motor radiculopathy
    - Sphincter failure - incipient or established recent <48 hours
    - Sphincter failure Established > 48 hours
    - Spontaneous epidural haematoma
    - Ankylosing Spondylitis with new pain
    - Metastatic Spinal Cord Compression with neurological symptoms /signs
    - Spinal infection
  - Urgent
    - Osteoporotic Fracture with severe or significant pain at 8 weeks
    - Spinal metastases no neurological deficit (See NICE CG75)

    (See Red Flag Appendices 1, 2 and 3).

- Definition of skills / competencies required
    - Essential competencies
        - Clinical screening for serious pathologies: cauda equina syndrome, tumour, infection, major neurological deficit, osteoporotic collapse, inflammatory disease.

    - Essential Skills
        - Clinical examination of the spine and nervous system
        - Communication of diagnosis and prognosis
        - Shared decision making
        - Expectation management

- Link to other source of advice
    - Spinal on-call service (compliant with Service Specification D14. The regional spinal network should ensure 24/7 access to MRI scanning for a suspected cauda equina or spinal cord compression (same day for emergency referral and within one week for urgent referrals.). Spinal surgeons able to perform any necessary emergency surgical procedures must be available 24/7.
        - Immediate telephone access
        - "virtual clinic" meetings
        - MDT review meetings
    - Specialist Triage Assessment (Box 9)
    - MSCC Coordinator

- Entry criteria including necessary investigations / results
    - Red Flags for Cauda Equina Syndrome and/or cord compression
        - History
            - Urinary retention / incontinence
            - Faecal incontinence
            - Altered perianal and/or genital sensation
            - Limb weakness
        - Examination
            - Limb weakness
            - Generalised neurological deficit / gait disturbance
            - Hyper-reflexia, clonus, extensor plantar response
            - Saddle anaesthesia
            - Reduced anal tone / squeeze (if circumstances permit)
            - Urinary retention

    - Red Flags for suspicion of tumour / infection. History:
        - Past history of cancer (all patients should have been given an alert card about MSCC following their initial presentation)
        - Unexplained weight loss
        - Other symptoms suggestive of malignancy
        - Unwell / Fever
        - Raised inflammatory markers ESR>50, PCV < 30
        - Age <10 years or Age >60 years
        - Pain - Thoracic or persisting non-mechanical
        - Possible immunosuppression – IVDU, HIV, Chemotherapy, Steroids.
- Exit Criteria
    - Red Flags excluded

- Essential referral information
    - Red Flags suspected

- Patient Assessment
    - History:
        - Episode history and progress
        - Limb pain, weakness and sensory disturbance
        - Bladder / bowel / sexual dysfunction, systemic symptoms
        - In patients with neck and arm symptoms ask about clumsy hands and unsteady legs.
        - General medical history
    - Examination:
        - Observation of spine, lower limbs, gait, pain behaviour
        - Limb pain, weakness and sensory disturbance
        - Neurological signs including upper motor neurone signs if suspicious of myelopathy.
        - Perform a perineal assessment (including perianal sensation, anal tone and contraction, if circumstances permit)
        - Detailed full general medical examination (as indicated when symptoms suggest more significant underlying pathology)

- Shared Decision Making / Patient Choice
    - Spinal on-call service (compliant with Service Specification D14)
        - Immediate telephone access
        - “Virtual clinic” meetings
        - MDT review meetings
    - Specialist Triage Assessment (Box 9)
    - MSCC Coordinator

- Interventions
    - Emergency referral to Spinal Surgeon (same day). Emergency imaging.
        - Cauda Equina Syndrome: bladder / bowel dysfunction
        - Acute spinal cord compression: new/progressive widespread neurological deficit
        - Progressive limb weakness including major motor radiculopathy
    - Urgent referral to Spinal Surgeon (<2 weeks): - Priority Spine imaging (same day or according to local protocols)
        - Red Flags in the absence of neurological compromise
            - MRI - Whole spine imaging according to local agreements with Radiology services
            - Blood tests should be obtained (these would normally include FBC, biochemistry Inflammatory markers (PV, ESR, CRP according to local practice)
            - The result reviewed and the subsequent treatment plan defined by the requesting clinician within one week (c.f. with MSCC QSAC recommendations) or sooner if clinically indicated
            - Time to subsequent review / action being dependent on the imaging and test results.
    - Surgical Interventions include (see Red Flag appendix 4)
        - Cauda Equina Syndrome
            - Lumbar spinal decompression and discectomy. This is performed posteriorly and involves decompression of the nerves and removal of fragments of disc compressing the nerves.
        - For other conditions, key interventions include:
            - Image guided biopsy (tumour and infection)
            - For tumour, neo-adjuvant chemotherapy

- Tumour Excision (see Red Flag appendix 4) - this may be: Extralesional, Marginal, Intralesional
- For Spinal Reconstruction (see Red Flag appendix 4) there are different routes and techniques to stabilise the spine. These may be used in varying combinations. These include:
    - Vertebroplasty – (kyphoplasty)
    - Pedicle screw stabilisation
    - Anterior spinal reconstruction
    - Combinations of the above

- Measurement point for quality standard and outcome, PROMS (see Red Flag appendix 5)
    - Surgical complications
    - ODI
    - VAS back and leg
    - EQ-5D

- Self-Management
    - This is not regarded as appropriate for this patient group.

- Co-morbidity
    - This has significant potential implications as many if not most of these conditions usually require surgical intervention and ASA Anaesthetic grading (and if below threshold - defined locally) anaesthetic assessment in the referring hospital is recommended prior to patient transfer to a surgical centre).
    - This should not delay urgent transfer if clinically required

- Definition satisfactory result. (see Red Flag appendix 5)
    - Surgical rate by indication and reasons for non-intervention
    - Mortality - operative and 30 day
    - Rate of post–operative neurological deterioration
    - Rate of complications (wound infection, failure of construct or fusion)
    - Rate of re-operation
    - PROMS

- Evidence base and its level of evidence.

    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/appendices-kq-2726158004
      The red flag conditions listed above are out-with the remit of this NICE guideline as defined in the scope.

      A more comprehensive list of these and related conditions with appropriate timelines for their referral is listed in appendix 2 of this document.

    - Red flags www.sheffieldbackpain.com/professional-resources/learning/in-detail/red-flags-in-back-pain
    - Organising quality and effective spinal services for patients DH Spinal Taskforce 2010 www.nationalspinaltaskforce.co.uk/
    - Commissioning Spinal Services - Getting the service back on track DH Spinal Taskforce 2013 www.nationalspinaltaskforce.co.uk/
    - NICE guideline CG75 MSCC (November 2008) NICEhttp://guidance.nice.org.uk/CG75/QuickRefGuide/pdf/English
    - Acute Oncology Measures (March 2011) National Cancer Action Team http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_125889.pdf

- Provision of time line.
  - Consider medical pathology at each review where good outcomes not achieved
  - Inflammatory spinal disease (spondylitis/sacroiliitis) may not be evident on plain radiographs or standard MRI images of lumbosacral spine, particularly in early disease (e.g. < 5 years).

- Definition of skills / competencies required.
  - Essential Competencies
    - Diagnostic skills and management experience in inflammatory spinal disease and associated co-morbidities.
    - Requires a specialist multidisciplinary team typically including an accredited rheumatologist and physiotherapy.

- Link to other source of advice

- Entry criteria including necessary investigations / results
  - Diagnostic uncertainty with suspicion of medical pathology:
    - Pain disturbing sleep
    - Thoracolumbar or sacroiliac pain
    - Marked morning stiffness
    - Persisting limitation spinal movements in all directions
    - Peripheral joint involvement
    - Iritis, psoriasis, colitis, enthesopathies
    - Preceding infective diarrhoea or sexually transmitted infection
    - Family history of spondylitis
  - Investigations prior to specialist referral may typically include
    - Blood tests (acute phase response, e.g. C-reactive protein, Erythrocyte Sedimentation Rate, and tests to exclude other diagnoses (bone profile, immunoglobulins, etc.)).
    - HLA-B27 genotyping has little value in diagnosis. In the UK 5% of people with ankylosing spondylitis are HLA-B27 negative, <2% people who are HLA-B27 positive will ever develop inflammatory spinal disease, whereas 60% may have non-inflammatory spinal pain.
    - Imaging is determined by clinical presentation and may be deferred to the specialist team. In longstanding disease, spinal radiographs (e.g. lateral spine, sacroiliac views) may be diagnostic. However, for some years after symptom onset, plain radiographs may be normal. Standard T1 and T2 lumbosacral MRI images will typically omit the synovial component of sacroiliac joints and lacks the sensitivity of STIR imaging to detect inflammation. The presence of spondylotic changes does not exclude concurrent inflammatory spinal disease; disc disease is no less common in people with ankylosing spondylitis than in the normal population.

- Exit Criteria
  - Other medical conditions causing spinal pain include:
    - Discitis (infective or sterile)
    - Paget's disease of the bone

- Essential referral information
    - History of back pain episode
    - Information concerning entry criteria, including past or current history of peripheral joint involvement, iritis, psoriasis, colitis, family history of spondylitis
    - Current and previous treatments

- Patient Assessment
    - History for associated features as above, including infective and sexual history.
    - Examination to include assessment of spinal movement (not specific), sacroiliac stress tests, assessment of skin, joints and eyes, exclude associated features including interstitial lung disease and aortic valve pathology.
    - Assessment of previous treatments and symptom severity / impact (function, psychological: Bath Ankylosing Spondylitis Disease Activity Index (BASDI), Bath Ankylosing Spondylitis Functional Index, BASFI).
    - Investigations to confirm diagnosis. MRI with STIR sequences of affected regions of the spine is the most sensitive imaging method for detecting early disease where there is high clinical suspicion.

- Shared Decision Making / Patient Choice
    - Reinforce advice and discussion with written information (e.g. Arthritis Research UK patient information leaflets).
    - National Ankylosing Spondylitis Society (NASS); patient support group with local groups and activities.
    - All patients with inflammatory spinal disease should have access to a specialist multidisciplinary team (ARMA guidelines).

- Interventions
    - Medical: Non-steroidal anti-inflammatory agents with gastro-protection as appropriate. Simple analgesia where appropriate. NB NSAIDs more effective than long term opiates. Avoid glucocorticosteroids (high risk of osteoporosis and spinal fracture). Injections not of proven benefit. NB: people with high disease activity/impact despite adequate trial of non-steroidal anti-inflammatory agents may be eligible for biologic therapy (TNF-alpha blockers) (NICE technology appraisal TA383).
    - Physiotherapy: Mobilisation and general aerobic exercise. Land or water-based group exercise. Balanced advice about contact sports, whilst minimising fear avoidance.
    - Mental health: Psychological distress less common/severe than in non-inflammatory spinal disease for same level of pain/disability, but may be important co-morbidity and barrier to recovery. Key issues common to other chronic, disabling, incurable diseases.

- Measurement point for quality standard and outcome, PROMS.
    - Ongoing specialist support indicated (ARMA guidelines).
    - Key PROMS: BASDI, BASFI.
    - Continuation of biological therapies depends on response (NICE guidelines). Time from symptom onset to diagnosis currently averages 7 years. The hypothesis that early diagnosis/treatment leads to better outcomes is currently under research investigation, although ethical arguments support earlier diagnosis.

- Self-Management
    - Daily exercises, medications, pain management.

- Co-morbidity
    - Peripheral arthropathy: requires treatment according to inflammatory disease guidelines. NB disease modifying anti-rheumatic drugs (e.g. methotrexate, sulphasalazine), although of possible benefit for peripheral joint disease, have no demonstrable benefit for inflammatory spinal disease.
    - Cutaneous psoriasis: requires treatment according to dermatology guidelines.
    - Inflammatory bowel disease: requires treatment according to gastroenterology guidelines.
    - Patients who do not satisfy eligibility criteria for biologic therapy for spinal disease alone, may yet satisfy criteria for treatment of co-morbidities and, if initiated, these treatments may still provide important symptomatic and functional benefit for the spine. A multidisciplinary perspective is therefore essential.
    - Sexually transmitted diseases: require full genitourinary assessment to exclude concurrent and persistent infections.
    - Uveitis: may be sight threatening and affects 5% of people with inflammatory spinal disease. Early access to specialist opthalmology services is essential where uveitis suspected.
    - Osteoporosis: inflammatory spinal disease is a risk factor for osteoporosis and spinal fracture. Follow national guidelines on osteoporosis diagnosis and treatment.

- Definition satisfactory result
    - Maximised long term health-related quality of life through control of symptoms and inflammation, prevention of progressive structural damage, preservation/normalisation of function and social participation. Long term access to specialist care access indicated.

- Evidence base and its level of evidence.
    - NICE TA143 (adalimumab, etanercept and infliximab for ankylosing spondylitis) and TA233 (golimumab for the treatment of ankylosing spondylitis).
    - Braun, J., et al. 2010 update of the ASAS/EULAR recommendations for the management of ankylosing spondylitis. Ann. Rheum. Dis. 2011;70:896-904.

Please note that this will be the same specialist triage practitioner as Boxes 9, 11 and 13

Overview

Lumbar radicular pain is where the clinician suspects the pain is coming from a lumbar nerve root. This suspicion may vary between clinicians and is effectively a probability, based initially on symptoms. Typical symptoms are of pain, sensory disturbance and/or weakness in the lower limb(s) with a dermatomal distribution. However, symptoms may be only in the thigh (upper lumbar nerve roots) or buttock. The more proximal the pain, the less likely is a diagnosis of lumbar radicular pain. Lumbar radicular pain is very rarely a cause of just low back pain. Clinical signs may increase the probability that the symptoms are nerve root in origin and the final probability from symptoms and signs may dictate early management and whether imaging should be performed. An MRI showing lumbar nerve root compression does not confirm the diagnosis of lumbar radicular pain but simply changes the probability depending on concordance with symptoms and signs. Nerve root compression on MRI may be equivocal or absent; this doesn't exclude symptoms arising from the lumbar nerve root but is likely to change management options.

Referred leg pain is simply one minus the probability of radicular pain, and may frequently radiate below the knee.

The variability in severity and clinical course makes rigid rules impossible.

- Provision of time line.
    - May be identified at initial presentation

- Definition of skills / competencies required. In addition to those in Box 3
    - Essential competencies
        - Clinical screening for serious pathologies: tumour, infection, major neurological deficit, osteoporotic collapse, inflammatory disease.
        - Excluding emergency symptoms such as impending cord compression or cauda equina
        - Able to take a clear history distinguishing leg pain from back pain
        - Defining management so far including analgesia
        - Assessment of severity of symptoms – tolerable / non-tolerable
        - Referral for diagnostic tests
        - Interpretation of Scans in conjunction with Radiologist's report
        - Referral for diagnostic nerve root blocks
        - Referral for therapeutic spinal injections nerve root block/epidural
        - Referral for surgical opinion

    - Essential Skills
        - Clinical examination of the spine Including
            - lower limb neurological examination
            - assessment of weakness and long-tract signs
        - Ability to diagnose lumbar radicular pain, myelopathy and neurogenic claudication.
        - Communication of diagnosis and prognosis
        - Shared decision making
        - Expectation management

- Link to other source of advice.
    - Different skill levels amongst the assessment staff
    - Link with Spinal and Radiology MDT
    - Pain Management Services (Box 16)
    - Spinal on call service
    - Staged RTW-Occ Health (Box 24)

- Entry criteria.
    - Severe radicular pain at 2-6 weeks depending on severity and improvement
    - Non-tolerable radicular pain at 6 weeks

- Exit Criteria.
    - Emergency referral to Spinal Surgery Service if suspected spinal cord compression or cauda equina syndrome (Box 6).
    - Urgent referral to Spinal Surgery Service or urgent MRI if suspected tumour or infection (Box 6)
    - Severe or progressive motor deficit (e.g. foot drop) discuss with Emergency Spinal Surgery Service (Box 6)

- Essential Referral Information.
    - Duration, severity and location of leg pain
    - Medical history
    - Current medication
    - Treatment so far including analgesia tried

- Patient Assessment.
    - Red Flags, including cauda equina syndrome (see box 6)
    - Episode history and progress
    - Assessment of severity of symptoms: Clinical and EQ5D/ODI/VAS
    - Observation of spine, lower limbs, gait, pain behaviour
    - Neurological examination
    - Impact on family, social and work ability
    - Psycho-social assessment

- Shared Decision Making / Patient Choice.
    - Depends on severity of symptoms, patient beliefs, expectations and objectives
        - Discharge if symptoms settle (Box 5) with staged return to work (Box 24).
        - Conservative Therapy (Box 18) if symptoms not severe enough to consider invasive treatments or patient's decision
        - Consider imaging for people with radicular pain only if the result is likely to change management.
        - Investigation (Box 19) if non-tolerable radicular pain 6 weeks after onset of symptoms or earlier if either severe, non-controllable pain or significant neurological deficit (e.g. foot drop)
            - MRI
            - CT scan if MRI scan contraindicated or not tolerated.
    - Goal setting / Realistic expectations

- Interventions.
  - Advice and Information
    - Cauda Equina Syndrome
    - Advice on the natural history of radicular pain
    - Advice on management options: pain management, nerve root injection, surgery
  - Do not refer for (NICE 2016)
    - Interferential therapy, PENS or TENS, ultrasound, acupuncture, or traction
    - Belts, corsets, foot orthotics, or rocker sole shoes
    - Epidural injections for neurogenic claudication with central spinal stenosis

- Measurement point for quality standard and outcome, PROMS.
  - % referred for MRI
  - % referred to Spinal MDT
  - % referred to Spinal Surgery Service / conversion rate to surgery
  - % Referred to pain management
  - Number of missed / delayed diagnosis of cauda equina syndrome
  - EQ5D & ODI
  - PREMS

- Self-Management.
  - Patients should be given the option for self-management with analgesia and possibly manual therapy.
  - GP or over the counter medication
  - Self-directed exercise programme
  - Self-directed relaxation techniques
  - Self-directed return to work
  - Self-directed return to normal social and leisure activities

- Co-morbidity
  - Cardiac
  - Diabetes
  - Mental Health
  - Musculoskeletal (other than back pain)
  - Obesity
  - Neurological
  - Respiratory

  .
- Definition satisfactory result.
  - Choice for conservative management
  - Patient reported improvement
  - Patient choice to self-manage

- Evidence base and its level of evidence.
  - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/full-guideline-assessment-and-noninvasive-treatments-2726158003.

Box 9 - Specialist Triage Assessment:

Contents Flow Chart

Overview

The function of the specialist triage practitioner is to direct the pathway of care and provide continuity of care across the pathway. It is important that this will be the same clinician as box 8, 11 and 13. This clinician is highly trained (band 8 or above) and has significant skills, competencies and high autonomy (Appendix 2). This clinician may also deliver care in other boxes in the pathway according to the local circumstances and skill mix. Their primary role however should be specialist triage.
They have a major role in the:

- identification and referral of emergency spinal presentations
- identification, investigation and referral of urgent spinal presentations
- identification and discharge of patients who can self-mange
- identification, investigation and referral of radicular pain
- identification and referral of inflammatory disorders
- Identification and referral of back pain related disability
- Identification, investigation and referral of potential spinal surgical candidates

Patients who, at early clinical review (Box 3), are referred directly to core therapies (Box 10) will bypass this step, but it is to this practitioner that the pathway will return to if there is insufficient response to treatment or concerns are raised about diagnosis or any other matter.

- Provision of time line.
    - Within 2 weeks of early triage (Box 3) or following a trial of Core Therapies (Box 10)

- Definition of skills / competencies required
    - Essential minimal competences: In addition to those in Box 3 and Box 8
        - Excellent communication skills
        - Comprehensive psychosocial assessment for risk of persisting pain related disability
        - Identification of presentations suggestive of neurological, vascular or abdominal origin.
        - Assessment of severity and impact of symptoms – tolerable / non-tolerable
        - Assessment of medication effectiveness and identification of side effects, adherence, dependency or misuse
        - Defining management so far including analgesia
        - Referral for diagnostic tests
        - Referral to other services
        - Knowledge of the locally commissioned back pain pathway
        - Knowledge of international and national back pain guidelines
        - Understanding and identification of pain as a primary condition
        - Referral for nerve root block
        - Referral for surgical opinion
        - Referral to pain management

Essential Skills: In addition to those in Box 3

- Ability to undertake a comprehensive spinal bio-psychosocial assessment including screening questionnaires, interview and clinical examination
- Ability to request diagnostics including MRI scans, medial branch block, nerve root blocks, CT scans and bloods
- Ability to interpret spinal radiology images in conjunction with the Radiologist's reports
- Ability to identification pain as a primary condition
- Ability to communicate diagnosis and prognosis
- Ability to discuss the risks and benefits of appropriate treatment options and facilitate patient choice through shared decision making

        - Ability of manage complex patient expectations
        - Ability to discuss the benefits of remaining in work
        - Ability to present cases at MDT meetings
        - Ability to refer appropriately to services across the pathway

- Link to other source of advice: In addition to those in Box 3
    - Occupational Health Services (Box 24)
    - Disability employment advisers
    - Pain Management Services including CPPP and psychology (Box 12, 16)
    - Radiology
    - Spinal and Radiology MDT
    - Spinal on-call service

- Entry criteria
    - Symptoms or signs of lumbar origin present for > 3 weeks not suitable for core therapies
    - Insufficient improvement with primary care management and advice

- Exit Criteria
    - Suspected metastatic spinal cord compression, cauda equina syndrome, or infection.
    - Radiologically confirmed tumour, infection, acute fracture or spinal inflammatory disease
    - Non-spinal presentation

- Essential referral information
    - As Box 3 and
    - Response to early management

- Patient Assessment (As box 3)
    - Patient expectations and beliefs
    - Comprehensive neurological examination including long tract signs

- Shared Decision Making / Patient Choice
    - Discharge/self-management (Box 5)
    - Inflammatory diseases (Box 7)
    - Core therapies including low intensity CPPP (Box 10)
    - Radicular pain pathway (Box 8)
    - Specialist pain management services (Box 16)

- Interventions: (In addition to box 3)
    - Consider imaging for people with low back pain with or without radicular pain only if the result is likely to change management.
    - Advice and information
        - Diagnostic explanation including imaging
        - Prognostic explanation
        - Address specific patient concerns
    - Do not refer for (NICE 2016)
        - Interferential therapy, PENS or TENS, ultrasound, acupuncture, or traction
        - Belts, corsets, foot orthotics, or rocker sole shoes
        - Spinal injections for managing low back pain

- Measurement point for quality standard and outcome, PROMS.
    - % screened for serious pathologies
    - % referred for MRI
    - Reporting of number of missed specific pathologies (tumour, cauda equina syndrome, inflammatory disease, fracture)
    - EQ5D, ODI and VAS
    - Global rating of progress

- Self-Management
    - As box 3

- Co-morbidity
    - As box 3

- Definition satisfactory result
    - Patient reported improvement
    - Successful return to normal activities including work
    - Patient choice to self-manage

- Evidence base and its level of evidence.
    - Internationally clinical guidelines consistently recommend spinal triage including screening of red flags and the assessment of psychosocial risk factors.
    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/full-guideline-assessment-and-noninvasive-treatments-2726158003

Box 10 - Core Therapy

Contents Flow Chart

- Provision of Time line:
  - For standard referrals patients should be seen within 2 weeks subject to patient choice (patients with intermittent pain, mild to moderate reduction in function and activities of daily living).
  - For urgent referrals patients should be seen within 72 hours subject to patient choice (patients dependent on strong analgesics, severe sleep disturbance, condition likely to deteriorate without therapy, severe impairment of activities of daily living, pregnant women under 35 weeks).
    https://www.supply2health.nhs.uk/AQPResourceCentre/AQPServices/PTP/Pages/BackNeckPain.aspx

- Definition of Skills / competencies:
  - Essential competencies
    - Knowledge and understanding of clinical care pathways for people with back pain
    - Formulate a working and differential diagnoses and prognosis
    - Monitor and re-assess patient whilst under their care
    - Good communication skills
    - Understand the process of consent and the need to involve the patient in decisions about their care and set goals and objectives of care
    - Deliver a range or treatment options that may include advice, self-management, exercise approaches, manual therapy and psychologically informed care.
    - Understand and evaluate the quality of care delivered
    - Understand and interpret symptoms and signs that may indicate serious pathology
    - Advise patients on the appropriate use of pain relief and pain modifying medications and other pain management strategies
    - Recognise the need to work within their scope of practice.
    - Understanding of interdisciplinary working
    - Ability to undertake a bio psychosocial assessment of the patient. This includes history of presenting condition, assessing and eliciting psychological and social issues related to the presenting condition and physical examination.
    - Ability to Identify: “red flag” associated pathologies; co-morbidities; modifiable psychosocial obstacles (yellow flags) to recovery (including application of stratification tools where appropriate).
    - Advise patient about the signs and symptoms of a developing Cauda Equina syndrome and what actions that they should take (medical emergency).
    - Ability to assess progress and keep diagnosis under review.
    - Ability to select and refer patient to appropriate services
    - Ability to communicate diagnosis and care plan to patients and colleagues as required
    - Ability to undertake specific Patient Reported Outcome Measures (PROMs) and understand the significance of these.

- Link to other source of advice
  - Triage Service (Box 9/11)
  - Bone Metabolism/osteoporosis service
  - Employment services (Box 24)
  - Radiology
  - Rheumatology
  - Specialist pain services including PMP and psychology (Box 16)
  - Spinal surgical service
  - Spinal on-call service

- Entry criteria:
    - Patients with non-specific low back pain

- Exit criteria:
    - Confirmed radiculopathy including new onset severe or progressive motor deficit (e.g. foot drop)
    - Serious (red flag) pathologies such as Cauda Equina syndrome, cancer (including metastatic disease), infection and fracture.

- Essential referral information
    - Diagnosis of non-specific low back pain
    - Appropriate for core therapies.
    - Co-morbidities.

- Patient assessment:
    - Red Flags, including cauda equina syndrome (see box 6)
    - History taking including medical, psychological and social factors, previous treatments effect, severity of pain/disability and patient's understanding of their condition and their expectations.
    - Physical examination including observation, spinal mobility, neurological examination, and relevant differential diagnostic tests as necessary.
    - Appropriate use of stratification tools if not previously undertaken.

- Shared decision making/patient choice:
    - Self-management (Box 5)
    - Core therapies (exercise with or without manual therapy with or without low intensity CPP as appropriate)
    - Specialist triage review (Box 11)
    - Staged RTW/Occ Health (Box 24)

- Interventions:
    - A package of care tailored to the individual in terms of treatment options and frequency of treatment delivery will be considered taking account of patient expectations and preferences. Low back pain related distress, anxiety, fears, beliefs and expectations should be addressed as an integral part of the package of care.
    - It is anticipated that the number of core therapy treatment sessions will vary between patients with many needing short periods of care. If there is insufficient response to the package of core therapy then a dedicated review should take place with the specialist triage practitioner.
    - Advice and promoting self-management
    - Discuss analgesia and other pain management strategies, ensuring patient has access to prescribing clinician.
    - Provide consistent message to remain active and foster a positive attitude with realistic expectations.
    - Consider treatment options that could include:
        - **Exercise**: a group exercise programme (biomechanical, aerobic, mind–body or a combination of approaches) within the NHS for people with a specific episode or flare-up of low back pain with or without radicular pain. Take people's specific needs, preferences and capabilities into account when choosing the type of exercise.
            - 1-1 if group is not available or appropriate
        - **Manual therapy**: manual therapy (spinal manipulation, mobilisation or soft tissue techniques such as massage) for managing low back pain with or without radicular

pain, but only as part of a treatment package including exercise, with or without psychological therapy.
- **Low intensity CPPP**: led by a single therapist (e.g. physiotherapist) supported by a second discipline (e.g. psychologist), using a cognitive behavioural approach for managing low back pain with or without radicular pain but only as part of a treatment package including exercise, with or without manual therapy (spinal manipulation, mobilisation or soft tissue techniques such as massage).

- Discharge on satisfactory response (box 5) including ability for patient to return to GP or triage practitioner if persistent concerns exist.
- Referral to RTW / Occ. Health (box 24), specialist triage service for review (Box 11)
- For managing low back pain with or without sciatica, NICE 2016 recommended **against**:
  - Belts or corsets
  - Foot orthotics or rocker sole shoes
  - Traction
  - Acupuncture
  - Ultrasound
  - Percutaneous electrical nerve stimulation (PENS)
  - Transcutaneous electrical nerve stimulation (TENS)
  - Interferential therapy

- Measurement Point Quality standard and outcome, PROMS:
  - Patients should be assessed pre-treatments and at appropriate point or points during care.
  - VAS, ODI, EQ5D
  - PCOMS

- Self-Management:
  - Discuss analgesia use and access to a prescribing clinician.
  - On the nature of non-specific low back pain and that improvement is likely
  - Stay active or progressively increase activity where possible including return to work
  - Address specific patient concerns and expectations
  - Indications for clinical review and emergency attendance
  - Patient information including the Back Book

- Co-morbidity
  - Co-morbidities should be identified and consideration given to how care may need to be modified. Patients should be referred or signposted appropriately.
    - Cardiac
    - Mental Health
    - Musculoskeletal (other than back pain)
    - Neurological
    - Respiratory

- Definition of satisfactory result:
  - Clinically significant improvement in PROM with reduction of pain, disability, and psychosocial factors
  - Return to usual activities (including return to work)
  - Improved patient self-management
  - High levels of patient satisfaction with care and patient reported experience

- Post Shared Decision Making / Patient Choice
  - Discharge/Self-management (Box 5)
  - Specialist Triage (Box 11)

- Evidence base and level of evidence.
    - NICE NG59 Low back pain and radicular pain in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/full-guideline-assessment-and-noninvasive-treatments-2726158003

Box 11 - Specialist Triage review following Core Therapies

Contents Flow Chart

Please note that to provide continuity of care across the pathway **this will be the same clinician as Box 9**

At this point particular consideration should be given to possible diagnosis of pain as a primary condition.

- Provision of time line.
  - Not before 12 weeks from initial presentation and management

- Definition of skills / competencies required
  - Essential competences and skills: As box 3 & 9

- Link to other source of advice
  - As Box 3 & 9

- Entry criteria
  - Symptoms or signs of lumbar origin present for > 12weeks
  - New or progressive symptoms
  - Insufficient improvement with core therapies

- Exit Criteria
  - Suspected metastatic spinal cord compression, cauda equina syndrome, or infection
  - Radiologically confirmed tumour, infection, acute fracture or inflammatory disease
  - Non-Spinal presentation

- Essential referral information
  - As Box 3
  - Response to core therapies

- Patient Assessment as Box 3 & 9

- Shared Decision Making / Patient Choice
  - Discharge/self-management (Box 5)
  - Radicular pain pathway (Box 8)
  - Core therapies including low intensity CPPP (Box 10)
  - Comprehensive multi-disciplinary CPPP (Box 12) Decision based on
    - Significant disability from Low Back Pain with insufficient response to Core Therapies
    - Expectation of continuing improvement
    - Expected outcome work ability
    - No physical co-morbidity which would preclude exercise
    - Working age group
    - Suitable for group format
    - Psychological approach (CBT principles, goal setting, problem solving) with
    - Intensive physical exercise component
  - Specialist Pain Service (Box 16). Decision based on diagnosis of pain as a primary condition and significant psychological issues that can't be addressed by a comprehensive multi-disciplinary CPPP
    - Multiple pain sites rather than focused in the back
    - Patients are taking prescribed doses of opioids >120mg daily morphine equivalents and/or additional medication.
    - Patients are exhibiting disabling levels of distress, depression or anxiety
    - Patients are using alcohol or prescribed drugs inappropriately to relieve symptoms of pain and distress

        - Patients are using recreational drugs to relieve their pain
        - Significant fatigue
        - Poor prognosis for recovery
        - Co-morbidities precluding exercise
        - Severe disability (wheelchair, house bound)
        - Patients are significantly functionally impaired with insufficient response to an optimal pathway of interventions.

- Interventions
    - Consider imaging for people with low back pain with or without radicular pain only if the result is likely to change management.
    - Advice and information
        - Stay active including work
        - Pharmacy advice available
        - Fit note
        - Indications for clinical review and emergency attendance
        - Diagnostic explanation including imaging
        - Prognostic explanation
        - Address specific patient concerns
    - Do not refer for (NICE 2016)
        - Interferential therapy, PENS or TENS, ultrasound, acupuncture, or traction
        - Belts, corsets, foot orthotics, or rocker sole shoes
        - Spinal injections for managing low back pain
        - Epidural injections for neurogenic claudication with central spinal stenosis

- Measurement point for quality standard and outcome, PROMS.
    - Reporting of number of missed specific pathologies (including tumour, cauda equina syndrome, inflammatory disease, fracture)
    - EQ5D & ODI
    - Global rating of progress.

- Self-Management:
    - Public education (Box 1)
    - GP or over the counter medication
    - Self-directed exercise programme
    - Self-directed relaxation techniques
    - Self-directed return to work
    - Self-directed return to normal social and leisure activities

- Co-morbidity
    - Cardiac
    - Diabetes
    - Mental Health
    - Musculoskeletal (other than back pain)
    - Obesity
    - Neurological
    - Respiratory

- Definition satisfactory result
    - Patient reported improvement
    - Successful return to normal activities including work
    - Patient choice to self-manage

- Evidence base and its level of evidence.
    - There are no clinical trials related to the cost effectiveness of clinical review

Box 12 - Comprehensive Multi-Disciplinary Combined Physical and Psychological Programme

Contents Flow Chart

Overview

A Comprehensive Multi-Disciplinary Combined Physical and Psychological Programme (M-CPPP) is appropriate at this stage in the pathway for people with disabling back pain that has been refractory to optimal treatment including the core therapies.

These are always multidisciplinary with intensive physical and psychological elements, using cognitive behavioural principles throughout the programme. Suitable referrals for this programme are those patients where recovery, and for example return to normal activities, including work, is anticipated. Patients with more complex or widespread pain related disability are more suitable for a PMP (box 16) with a greater depth of psychology. Effectiveness is supported by NICE NG59.

The intensity of CPPP was not formally reviewed in NICE NG59. The exact duration will depend upon patient needs. Longer, more intensive programmes may give greater and longer-term benefit but intensive programmes are not required as standard for all patients.

CPPP may be delivered in a variety of community, primary or secondary care settings.

- Provision of time line.
  - 12 - 18 weeks from initial presentation and management

- Definition of skills / competencies required. This requires a multi-disciplinary team.

  - Essential competences
    - Biopsychosocial assessment skills.
    - Identification of significant psychological components relevant to recovery
    - Understanding of physiological and pathological processes.
    - Ability to work in multidisciplinary team
    - Knowledge of appropriate pharmacology of pain and indications for pharmacology review referral to a pain management service.
    - Design and delivery of tailored exercise programmes include aerobic, gym equipment and pool exercises
    - Delivery on CBT principles
    - Excellent communication skills.
    - Agreed activity plan using informed decision making with the patient
    - Goal setting
    - Creative problem solving
    - Review of medication usage and effectiveness
    - Psychological skills
    - Understanding of interdisciplinary working
    - Understanding of simulated work activities work adaptation including graded return and fit notes
    - Knowledge and understanding of pathways of management for people with back pain

  - Essential Skills
    - Motivation
    - Understanding principles of behavioural change
    - Shared decision making
    - Expectation management
    - Ability to apply CBT principles.

        - Ability to undertake specific Patient Reported Outcome Measures (PROMs) and understand the significance of these.
        - Ability to facilitate positive group work
        - Ability to design and implement an exercise programme tailored to the individual (delivered in group)
        - Ability to set patient specific goals
        - Ability to teach and apply principles of pacing
        - Ability to teach and deliver relaxation
        - Ability to teach and facilitate problem solving
        - Ability to design simulated work activities and facilitate return to work
        - Ability to issue fit notes and agree and communicate a graduated return to work plan.
        - Ability to facilitate helpful coping strategies.

- Link to other source of advice
    - Triage Service (Box 11)
    - Pain Management Services (Box 16)

- Entry criteria
  Consider a combined physical and psychological programme, incorporating a cognitive behavioural approach (preferably in a group context that takes into account a person's specific needs and capabilities), for people with persistent low back pain or radicular pain when:
    - they have significant psychosocial obstacles to recovery (for example, avoiding normal activities based on inappropriate beliefs about their condition) or when treatments earlier in the pathway have not been effective.
    - they have significant back pain related disability
    - they have difficulty returning to or maintaining in work
    - they have expectations of symptom improvement and return to activity
    - they have no physical co-morbidity which would preclude exercise
- Exclusion criteria
    - Multiple pain sites rather than focused in the back
    - Patients are taking large prescribed doses of opioids (>120mg daily morphine equivalents) and/or additional medication
    - Patients are exhibiting disabling levels of distress, depression or anxiety requiring specific therapy
    - Patients are using alcohol or prescribed drugs inappropriately to relieve symptoms of pain and distress
    - Patients are using recreational drugs to relieve their pain

- Exit Criteria
    - Completion of programme
    - Choice: self-management
    - Specialist triage review

- Essential referral information
    - History of back pain episode
    - Previous treatments
    - Social and work impact
    - Current pain pharmacology
    - Any identified objectives of patient

- Patient Assessment
    - Back pain history, management and outcome
    - Pain severity and % back and leg pain
    - Patient expectations and beliefs

- Impact on family, social and work ability
- Patient specific objectives

- Prior Shared Decision Making / Patient Choice
  - Discharge/self-management (Box 5)
  - Comprehensive CPPP (Box 12)
  - Specialist triage review (Box 13)
  - Pain management services (Box 16)

- Interventions
  - Comprehensive combined physical and psychological programme
    - Work and occupation related activities
    - CBT Principles
    - De-medicalisation of condition, group sessions
    - Self-reliance, coping strategies and goal setting/problem solving
    - Pain self-management skills
    - Advice and information
      - Improvement is likely
      - Pharmacology advice

- Measurement point for quality standard and outcome, PROMS.
  - Time to presentation
  - Return to Work or Occupation
  - Ability to self-manage
  - EQ5D
  - Back Specific Disability Score
  - % referred back for Specialist Triage Review and then referred for Surgical Review / Pain Management
  - Measurement of affect

- Self-Management
  - Self-directed exercise programme
  - Self-directed return to normal Employment, occupation, social and other activities Patient information including the Back Book
  - GP or over the counter medication

- Co-morbidity
  - Cardiac
  - Mental Health
  - Musculoskeletal (other than back pain)
  - Neurological
  - Respiratory

- Definition satisfactory result
  - Return to work / occupation
  - Improved EQ5D / Back Specific Disability Score
  - Patient reported improvement
  - Patient choice to self-manage

- Post Shared Decision Making / Patient Choice
  - Discharge/self-management (Box 5)
  - Specialist Triage review (Box 13)
  - Pain management service (Box 16)

- Evidence base and its level of evidence.
    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/full-guideline-assessment-and-noninvasive-treatments-2726158003

Please note that to provide continuity of care across the pathway, **this will be the same clinician as Box 8, 9 and 11.**

At this point particular consideration should be given to possible diagnosis of a specific facet joint pain component (Box 17).

- Provision of time line.
  - No earlier than 18 weeks from initial presentation

- Definition of skills / competencies required
  - Essential competences: As box 3 & 9

- Essential Skills: In addition to box 3 & 9
    - Knowledge and skills to discuss the limitations, risks and benefits of treatment options including the potential role of:
      - radiofrequency denervation
      - spinal surgery
    - Ability to refer for:
      - medial branch blocks
      - consideration of radiofrequency denervation
      - consideration of spinal surgery
      - consideration of spinal cord stimulation
- Link to other source of advice: In addition to box 3 & 9
    - Spinal surgical service
    - Pain Management Service

- Entry criteria
    - Symptoms or signs of lumbar origin present for > 18 weeks
    - Insufficient improvement with core therapies or CPPP

- Exit Criteria: In addition to box 3 & 9
    - Sufficient improvement following completion of CPPP

- Essential referral information: In addition to box 3 & 9
    - Response to CPPP

- Patient Assessment: As box 3 & 9

- Shared Decision Making / Patient Choice
    - Discharge/self-management (Box 5)
    - Radicular pain pathway (Box 8)
    - Pain Management Services (Box 16)
    - Referral for consideration of radiofrequency denervation
        - non-surgical treatment has not worked for them and
        - they have localised back pain rated as 5 or more on a visual analogue scale
        - Clinical features suggestive of a facet joint component:
            - Increased pain unilaterally or bilaterally on lumbar para-spinal palpation
            - Increased back pain on 1 or more of the following:
              - extension (more than flexion)
              - rotation
              - extension/side flexion

        - extension/rotation
    - AND
        - No radicular symptoms
        - No sacroiliac joint pain elicited using a provocation test.
    - AND a positive response to a medial branch block
- Referral for surgical opinion (Box 14)
- Referral for consideration of Spinal Cord Stimulation
    - Chronic radicular, neuropathic pain as judged by:
        - history, clinical examination and sometimes supported by investigation such as nerve conduction studies and quantitative sensory testing
    - Chronic mixed back/spinal and radicular pain
    - Recurrence of pain or a failure of pain relief from anatomically successful spinal surgery.
    - insufficient benefit from a reasonable algorithm of evidenced based usual care
    - Patient accepts they have a long-term chronic condition
    - Patient has cognitive ability to manage the therapy long term

- Interventions: As box 3 & 9
    - Consider imaging for people with low back pain with or without radicular pain only if the result is likely to change management.
    - Do not offer imaging for people with low back pain with specific facet join pain as a prerequisite for radiofrequency denervation.
    - Do not refer for (NICE 2016)
        - Interferential therapy, PENS or TENS, ultrasound, acupuncture, or traction
        - Belts, corsets, foot orthotics, or rocker sole shoes
        - Spinal injections for managing low back pain
        - Epidural injections for neurogenic claudication with central spinal stenosis
        - Spinal fusion (unless part of a RCT) or Disc replacement

- Measurement point for quality standard and outcome, PROMS.
    - % referred on for a surgical opinion, or pain service
    - Reporting of number of missed specific pathologies (tumour, Cauda Equina Syndrome, inflammatory disease, fracture)
    - EQ5D
    - Global rating of progress.

- Self-Management; As box 3 & 9

- Co-morbidity: As box 3 & 9

- Definition satisfactory result: As box 3 & 9

Box 14 - Surgical Opinion for Axial Back Pain

Contents Flow Chart

- Provision of time line.
  - 4 - 6 months from initial presentation and management

- Definition of skills / competencies required. This is a specialist Spinal Surgeon
  - Essential competences
    - Excellent communication skills.
    - Evaluation of psycho-social factors
    - Evaluation of natural history of low back pain
    - Evaluation of technical surgical factors
    - Understanding of investigations
    - Explanation of benefits and risks
    - Decision making between surgical procedures
    - Up-to-date 'Good Clinical Practice' training
    - Data entry into British Spine Registry
    - Registered as a recruiting site in a multi-centre low back pain fusion RCT

  - Essential Skills
    - Motivation and reassurance
    - Shared decision making
    - Expectation management
    - Ability to undertake specific Patient Reported Outcome Measures (PROMs) and understand the significance of these.

- Link to other source of advice
  - Pain Management

- Entry criteria
  - Significant disability from non-specific Low Back Pain with insufficient response to CPPP or PMP if appropriate
  - Expectation of continuing improvement
  - No physical co-morbidity which would preclude surgery
  - Patient accepts enrolment into RCT unless identifiable cause for LBP:
    - Lytic spondylolisthesis
    - Adult spinal deformity – scoliosis and/or sagittal plane imbalance
    - Post-surgical back pain
- Exclusion criteria
  - Multiple pain sites rather than focused in the back
  - Patients are taking large prescribed doses of opioids (>120mg daily morphine equivalents) and/or additional medication
  - Patients are exhibiting significant distress
  - Patients are using alcohol or other prescribed drugs inappropriately to relieve symptoms of pain and distress
  - Patients are using recreational drugs to relieve their pain
  - Patients are significantly depressed and anxious because of their pain
  - Patient who are not fit for surgery due to co-morbidities,

- Exit Criteria
  - Performance of surgery
  - Choice: self-management

- Essential referral information
    - History of Back Pain Episode
    - Previous treatments
    - Social and work impact
    - Current pain pharmacology
    - Specific objectives of patient
    - CPPP report

- Patient Assessment
    - Back pain history, management and outcome
    - Pain severity and % back and leg pain
    - Patient expectations and beliefs
    - Impact on family, social and work ability
    - Patient specific objectives
    - RCT data requirements

- Prior Shared Decision Making / Patient Choice
    - Understanding of patient objectives
    - Self-management (Box 5)
    - Pain Management Services (Box 16)
    - Spinal surgery (Box 15)

- Measurement point for quality standard and outcome, PROMS.
    - Time to presentation
    - Return to Work or Occupation
    - Ability to self-manage
    - EQ5D
    - Back Specific Disability Score
    - % conversion to surgery
    - Missed serious spinal pathologies
    - % who have not attended CPPP before surgical opinion.

- Self-Management
    - Self-directed exercise programme
    - Self-directed return to normal Employment, occupation, social and other activities Patient information including the Back Book
    - GP or over the counter medication

- Co-morbidity
    - Cardiac
    - Mental Health
    - Musculoskeletal (other than back pain)
    - Neurological
    - Respiratory

- Definition satisfactory result
    - Return to work / occupation
    - Improved EQ5D / Back Specific Disability Score
    - Patient reported improvement
    - Patient choice to self-manage

- Post Shared Decision Making / Patient Choice
    - Self-management (Box 5)
    - Specialist Pain Service (Box 16)

- Evidence base and its level of evidence.
    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) https://www.nice.org.uk/guidance/ng59/evidence/full-guideline-invasive-treatments-2726157998
    - Swedish Spine Registry (improvement one third Qualy maintained over 5 years)

It is strongly recommended that all surgical procedures are subjected to a national prospective evaluation by mandated entry into the British Spine Registry (or spine Tango).

- Provision of time line.
  - 6 - 8 months from initial presentation and management

- Definition of skills / competencies required. This is a specialist Spinal Surgeon.
  - Essential competences
    - Excellent communication skills.
    - Ward environment
    - Post-operative pain management
    - Post-operative therapy
    - Up-to-date 'Good Clinical Practice' training
    - Data entry into British Spine Registry
    - Registered as a recruiting site in a multi-centre low back pain fusion RCT

  - Essential Skills
    - Motivation and reassurance
    - Shared decision making
    - Expectation management
    - Technical surgical skills
    - Management of complications
    - Ability to undertake specific Patient Reported Outcome Measures (PROMs) and understand the significance of these.

- Link to other source of advice
  - In patient Pain Management
  - Anaesthesia
  - Physiotherapy
  - Specialist pain service

- Exit Criteria
  - Choice: Self-management
  - Unfit for Surgery

- Shared Decision Making / Patient Choice
  - Understanding of patient objectives

- Interventions
  - Fusion surgery for non-specific low back pain should be performed only as part of a randomised controlled trial. Such a trial may investigate any aspect of selection, prognostic factors, comparison to other treatments, approaches, techniques, use of instrumentation, adjuncts to fusion or similar.
  - Fusion surgery may still be considered as a necessary adjunct to another procedure performed for conditions other than non-specific low back pain, e.g. decompression for spinal stenosis with symptoms of claudication, radicular pain or other indication.
  - Fusion surgery in the lumbar spine may still be considered for specific pathologies such as spondylolysis and significant spondylolisthesis (Grade 2 or greater).
  - Fusion surgery in the lumbar spine may be considered for deformity in children and adults
  - Fusion surgery may be considered for causes other than non-specific back pain e.g. post-surgical back pain

- Fusion surgery techniques
  - Anterior
    - Muscle preserving
    - Large fusion area
    - Less bleeding
    - Risk of vascular complications
    - More difficult to revise
    - Specialised
  - Posterior
    - Can be combined with decompression
    - Familiar approach
    - With or without fixation
    - Smaller fusion area
  - PLIF/ TLIF
    - Dural / root retraction
    - Intra-canal scarring
    - Technical cage failures
- Total disc replacement is not permitted
- (flexible stabilisation) – discredited
- NICE 2016 recommended **against**:
    - Spinal injections for managing low back pain

- Measurement point for quality standard and outcome, PROMS. Best practice is to be part of a recognised spine registry (BSR/Spine Tango).
  - Time to presentation
  - Return to Work or Occupation
  - Ability to self-manage
  - EQ5D, ODI, VAS
  - Complications
  - Data requirement of RCT

- Self-Management
  - Self-directed exercise programme
  - Self-directed return to normal Employment, occupation, social and other activities Patient information including the Back Book
  - GP or over the counter medication

- Co-morbidity
  - Cardiac
  - Mental Health
  - Musculoskeletal (other than back pain)
  - Neurological
  - Respiratory

- Definition satisfactory result
  - Return to work / occupation
  - Improved EQ5D / Back Specific Disability Score
  - Patient reported improvement
  - Patient choice to self-manage

- Post Shared Decision Making / Patient Choice
  - Self-management (Box 5)
  - Specialist Pain Service (Box 16)

- Evidence base and level of evidence
  - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/full-guideline-invasive-treatments-2726157998.
  - Commissioning Spinal Services – Getting the Service Back on Track. Spinal Task Force 2012, DH January 2013
  - Fritzell P, Hägg O, Wessberg P, Nordwall A. 2001 Volvo Award Winner in Clinical Studies: Lumbar fusion versus nonsurgical treatment for chronic low back pain: a multicenter randomized controlled trial from the Swedish Lumbar SPINE Study Group. SPINE. 2001; 26:2521-32.
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  - Strömqvist B, Fritzell P, Hägg O, Jönsson B. The Swedish Spine Register: development, design and utility. Eur Spine J 2009; 18: S294-S30

Specialist Pain Management Services

Overview - Specialist Pain Management Services assist in the multidisciplinary management of patients with back pain and radicular pain by alleviating pain, reducing distress, aiding functional restoration and reducing the socio-economic burden of pain for the individual, the healthcare system and the community. This refers to the group of patients that have not responded or only partially responded to other elements of this pathway. A limited number of patients with exceptionally complex pain problems may be referred to Specialised Pain Management.
The knowledge, skills aptitudes are those found in pain management services that receive referrals for a wide range of painful conditions. The delivery of such services will depend on local arrangements but fulfil the core standards required of pain services as published by the Faculty of Pain Medicine of the Royal College of Anaesthetists. For specialised pain services there is also the NHS England's SPS Service Specification D07.

- Provision of time line
    - The Service must comply with national targets in relation to referral to treatment targets - currently 18 weeks.
    - International Association for the Study of Pain (IASP) recommend that patients with severe progressive pain with the risk of increasing functional impairment generally of six months duration or less are seen within one month.

- Definition of skills/ competencies required
    - Essential Competencies
        - Multi-specialty and multi-disciplinary assessment and management comprising
            - Preparation of a MDT management plan through shared decision making with the patient.
            - Clinically led by Consultants in Pain Medicine.
            - Multi-specialty skills **must** include specialist Clinical Psychologists, Physiotherapists, Nurses and if possible occupational therapists.
            - Ability to work in multidisciplinary clinics
            - Comprehensive understanding of physiological and pathological processes.
            - Identification of significant psychological components
            - Have a clear knowledge of pharmacological interventions (including drug optimisation), physical interventions (including spinal cord stimulation (SCS), nerve root blocks, epidurals, medial branch nerve blocks and radiofrequency lesioning) and individual and group psychological interventions (including standard and intensive Pain Management Programmes).
            - A high level of understanding of pathological causes of pain, their assessment and management as well as pain as a condition in its own right.

- Link to other source of advice
    - Specialist Triage (Box 9)
    - Surgical Opinion (Box 14)
    - Medial Branch Block +/- Radiofrequency Denervation (Box 17)
    - Nerve Root Block / Epidural (Box 22)

- Entry criteria including necessary investigations/results
    - Patients may be referred from General Practitioners, Triage, Investigation and Treat Practitioners, Orthopaedic Surgeons, Neurosurgeons, Pain Management Specialists or any skilled practitioner that has undertaken appropriate assessment.
    - Patients should be referred if:-
        - Pain has not responded to previous treatment (including this pathway)
        - Multiple pain sites rather than focused in the back and leg.
        - Patients taking prescribed and/or additional pain management medication without evidence of benefit.
        - Patients are exhibiting disabling levels of distress, depression or anxiety
        - Patients are using alcohol or prescribed drugs inappropriately to relieve symptoms of pain and distress
        - Patients are using recreational drugs to relieve their pain
        - Patients are significantly functionally impaired and other interventions have failed
        - Patients are referred for consideration of spinal cord stimulation
        - Patients are considered appropriate for epidural, nerve root block or medial branch nerve blocks / radiofrequency lesioning assessment as a part of a MDT management plan

- Exit Criteria
    - Completion of Programme
    - Shared care or ongoing community care support
    - Choice: Self-management

- Essential referral information
    - History of Back Pain Episode
    - Previous treatments
    - Social and work impact
    - Current and past pain pharmacology
    - Specific objectives of the patient

- Patient assessment
    - Interdisciplinary team assessment. An interdisciplinary team is an integrated working group where each individual has a high level of expertise in different aspects of management of patients with a complex condition, such as pain
    - Back pain history, management and outcome
    - Patient expectations and beliefs
    - Impact on family, social and work ability
    - Patient specific objectives. Multispecialty pain assessment may be available in Specialist Pain Services. A multispecialty team is a team of specialty experts that represent different disciplines involved in the assessment and management of pain, associated illness and consequences for daily functioning. For example, Specialist Pain Medicine and Psychiatry for problems such as pain and prescribed substance misuse or recreational drug misuse.

- Shared Decision making/Patient Choice
    - Shared decision making and patient choice is paramount in patient engagement in Specialist Pain Management Services.
    - Shared Care Arrangements are a vital part of this pathway with regard to Primary and Community Care and to Specialised Pain Management Services
    - Understanding of patient objectives
    - Tailoring of aspects of programme

- Interventions
    - Provide physical, psychological and behavioural interventions that support patients and their carers in managing their pain, enabling patients to lead more normal lives with reduced disability.
    - Provide individual care for patients with low back pain and or radicular leg pain.
    - Provide interventions to reduce attendance at the Emergency Department for acute on chronic exacerbations of back pain
    - Provide inpatient support for these patients who have high medical and psychological complexity, particularly where they are using controlled drugs
    - Treatments involving complex manipulations of medications, including opioids
    - Many patients require or are referred for physical interventions such as SCS, nerve root blocks, or epidurals, medial branch nerve blocks and denervation, which should be undertaken only in the context of a multidisciplinary team approach
    - Appropriate facilities and multidisciplinary staffing must be available which may take place within a Specialist Pain Service.
    - NICE 2016 recommended against:
        - Spinal injections for managing low back pain

- **Specific Interventions**

1. Pain Management Programmes (PMP)

The general aim of a PMP is to improve participation in daily activities, increase functionality and enhance quality of life for those with persistent pain and disability. There may be similarities and overlap between PMPs and Combined Physical and Psychological Programme (CPPP). Both are group programmes which use psychological principles throughout. However, PMPs are for patients with more complex pain related disability (see entry criteria), involve a wider MDT in integrated care, and applies a greater depth of psychology, whereas CPPP contains a more intensive physical therapy base. It is quite possible that some patients will be involved with more than one PMP like process.

- Provision of Timelines
    - Pain Management Strategies can be applied flexibly within care pathways

- Entry Criteria
    - Promotion of increased functionality and enhance quality of life.
    - Promotion of return to work is an important component of a PMP and can be the main focus of some. Suitability for a PMP is based on the impact of pain.
    - There are no grounds for discrimination on the basis of age, literacy, litigation or judgement of motivation.

- Patient Assessment
    - It is crucial for PMP clinical staff to assess participants comprehensively

- Interventions
    - PMP interventions can be classified broadly into three groups.
        - Targeted early interventions stratified to risk (Low risk on STarT Back Tool will have been triaged early in the pathway) such as the low intensity CPPP.
        - Standard PMPs
        - Intensive PMPs (usually delivered in Specialised Pain Services).
    - A standard PMP should be the equivalent of twelve half-day sessions (e.g.12x3 = 36 hours). Longer, more intensive programmes give greater and more enduring benefit but intensive programmes are not recommended as standard for all patients.

- Some very disabled and distressed patients will not benefit significantly from standard programmes but may benefit from more intensive programmes e.g. 15-20 full days. Intensive PMPs may be found in some Specialist and in Specialised Pain Management Services.
- Individual psychology and physiotherapy may be required before, during or after PMPs for specific problems. Nurse and consultant involvement can be key for the patient, but particularly around drug optimisation.
- A PMP is delivered by an interdisciplinary team where some competencies are shared and some are unique to particular professions. All staff use cognitive behavioural principles to deliver their component(s) of the PMP.
- The effective delivery of standard and intensive PMPs for complex problems requires highly skilled staff, working as a team in adherence to the principles defined within the BPS Guidelines document.
- PMPs may be delivered in a primary or a secondary care setting; the resources required will be the same. Evidence is growing that some principles of PMPs may be applied early in care pathways targeted to risk reducing future disability.
- There is no evidence to support the use of 'booster' programmes, and problems maintaining gains made on the PMP require individual intervention focused on maintenance in the patient's own environment

- Evidence base and its level of evidence.
  - Guidelines for Pain Management Programmes for adults. *An evidence-based review prepared on behalf of the British Pain Society.* The British Pain Society. November 2013: http://www.britishpainsociety.org/pub_professional.htm

2. Nerve Root Block / Epidural

See Box 22

3. Medical branch block and Radiofrequency Denervation

(Box 17)

4. **Spinal Cord Stimulation**

- Provision of Time Line
  - Currently the mean time for neuropathic pain to receiving a spinal cord stimulator is seven years. This time frame should be much shorter.
  - This would prevent suffering, and reduce ineffective therapies such as re-operation, repeat injections, medications and physical therapies.

- Definition of Skills/Competencies required. This is a multi-disciplinary team
  - Essential Competencies
    - Psychological Assessment
    - Functional Physiotherapy
    - Specialist neuromodulation skills
    - Implanting physician/neurosurgeon trained and practiced in a range of SCS techniques
    - Pain management specialist able to lead the Pain team and liaise with SCS implanter if different to self.

- Entry Criteria
  - Chronic radicular, neuropathic pain as judged by
    - history, clinical examination and sometimes supported by investigation such as nerve conduction studies and quantitative sensory testing

- Chronic mixed back/spinal and radicular pain
- Recurrence of pain or a failure of pain relief from anatomically successful spinal surgery.
- Pain persistent for more than 6 months
- Insufficient benefit from a reasonable algorithm of evidenced based usual care
  - anti-neuropathic pain pathway, x-ray guided nerve root and epidural therapies, patient education, physical therapy
- Patient accepts they have a long-term chronic condition
- Patient has cognitive ability to manage the therapy long term

- Exclusion criteria
  - Pregnancy at time of implant
  - Patient does not wish for an implantable device
  - Anticoagulant therapy where it is too dangerous to either stop or bridge to low molecular weight heparin
  - Uncontrolled coagulopathy
  - Multiple co-morbidity likely to result in a poor functional outcome
  - Known allergy to titanium, steel or silicone

- Patient assessment
  - Interdisciplinary assessment from Pain medical specialist, Specialist Pain Psychologist and Physiotherapist and specialist neuromodulation nurse

- Shared Decision making/choice
  - The patient will be at the centre of the decision making on whether to proceed with SCS trial and implant
  - Procedural risks, long term risks and possible sequelae will be highlighted
    - MRI conditionality, car driving, pregnancy, incidental surgery
    - The type of equipment and lead insertion procedure (neurosurgical paddle or minimally invasive cylindrical leads) should be discussed with for or against arguments presented in a balanced way

- Intervention
  - Placement of spinal cord stimulator
  - Education concerning
    - Long-term patient responsibilities
    - Use of SCS including re-charging and hand held programmer
    - Drug reduction strategy
    - Rehabilitation requirements
    - Role and need for re-programming attendances
    - Occasional need for revision procedure

- Measurement point for quality standard and outcome, PROMS.
  - All SCS centres will be linked to the National Neuromodulation Registry. This collects data on:
    - Brief Pain Inventory, EQ5D 5L, Global Impression of Change, Worst and Usual VASPI.
    - Device models and serial numbers, complications and explantations

- Definition of Satisfactory result
  - The minimum satisfactory result is a 30% reduction in usual NRS associated with an improvement of function as measured by BPI

- **For All Interventions**

- Measurement point for quality standard and outcome, PROMS.
    - Time to presentation
    - Return to Work or Occupation
    - Ability to self-manage
    - EQ5D 5L
    - Back Specific Disability Score
    - The Brief Pain Inventory captures pain, and physical and emotional function data.
    - Documentation of any change is by measuring before and at least one month after treatment
    - % of A&E attendances and admissions
    - Health care utilisation

- Self-Management
    - Self-directed management of medication, physical and psychological therapies to maximise the benefit
    - Self -directed return to normal Employment, occupation, social and other activities
    - Patient information including the Back Book

- Co-morbidity
    - Cardiac
    - Mental Health
    - Musculoskeletal (other than back pain)
    - Neurological
    - Respiratory

- Definition satisfactory result
    - Increase social and physical functioning, promoting return to work and maintaining productivity through employment
    - Improved EQ5D / Back Specific Disability Score
    - Patient choice to self-manage
    - Patient reported improvement / satisfaction
    - Promotion of the highest possible quality of life for patients with persistent pain that is a Long Term Condition, enabling them to lead more normal lives with reduced disability
    - Supporting clinicians in managing the pain element of their patients' care
    - Provision of inpatient support with management of pain problems of high medical and psychological complexity and the use of controlled drugs
    - Reducing recurrent inappropriate admissions and other health care services by promoting self-management
    - Reducing inappropriate medical appointments and readmissions.

- Evidence base and its level of evidence.
    - NICE TA 159 published in 2008 and last considered for review in 2012 provides the evidence required for widespread adoption of SCS for refractory neuropathic pain. http://publications.nice.org.uk/spinal-cord-stimulation-for-chronic-pain-of-neuropathic-or-ischaemic-origin-ta159
    - NICE NG59 2016. Low back pain and sciatica in over 16s: assessment and management (NG59). London. https://www.nice.org.uk/guidance/ng59
    - NICE (2009) Management of long-term sickness and incapacity for work. Public Health Guidance 19. London:
    - NICE (2014) Neuropathic pain: the pharmacological management of neuropathic pain in adults in non-specialist settings. Clinical Guideline (CG) 173
    - Interventional Procedure Guidance (IPG) 382.

- Faculty of Pain Medicine 2015. Core Standards for Pain Management Services in the UK.
- Royal College of Anaesthetists (2006) 'Raising the standard: a compendium of audit recipes: chronic pain services'
- Primary Assessment and Management. (community care)

http://bps.mapofmedicine.com/evidence/bps/index.html

- Spinal pain – low back pain and radicular. *http://bps.mapofmedicine.com/evidence/bps/index.html*
- Musculoskeletal non-inflammatory. *http://bps.mapofmedicine.com/evidence/bps/index.html*
- Neuropathic Pain.
- *http://bps.mapofmedicine.com/evidence/bps/index.html*
- International Association for the Study of Pain (2009) 'Desirable characteristics for pain Treatment Facilities' *www.iasp- pain.org*:
- Recommendations for Wait-Times for Treatment of Pain *www.iasp- pain.org*:
- Recommendations for Pain Treatment Services *www.iasp- pain.org*:
- Development of Clinical Practice Guidelines in the Field of Pain *www.iasp- pain.org*:
- Desirable Characteristics of National Pain Strategies 2010 *www.iasp- pain.org*:

Specialised Pain Management Services

Overview – Specialised Pain Management Services are defined by NHS England's SPS Service Specification D07. It is not the intention that this Pathfinder pathway supplements or replaces any aspect of D07 or the information contained in the NHS England Prescribed Specialised Services Manual and Identification Rules. The following is a guide only as the above documents may be updated from time to time.

Most patients with chronic pain can be well managed in the community or local Specialist Pain Services led by Pain Medicine Consultants with appropriately trained members of the interdisciplinary Pain Management team; these services will be commissioned by the CCGs. However, some patients with more complex chronic pain problems will require management in centres that offer Specialised Pain Management Services.

The aim of the service is to provide patients with persistent disabling pain a service which delivers timely, skilled interventions to reduce or remove the cause(s) of pain and/or to enable patients to manage their pain with psychological and behavioural support that their local specialist pain service or another tertiary service have not been able to achieve. This service specification relates to adults but there are significant overlaps in terms of the tertiary specialisms and in particular in relation to young people and transition.

- Provision of time line.
    - Referral is from Specialist Pain Management Services.
    - Service must comply with achievement of 18 weeks from referral for elective definitive treatment.

- Definition of skills / competencies required
    - Essential Competences
        - Multispecialty and multi-disciplinary assessment and management comprising
            - A Specialised Team with service specific competencies
            - Minimum 3 appropriately trained pain specialist consultants (FFPMRCA or equivalent)
            - Minimum of 2 specialist nurses
            - More than 1 WTE Chronic Pain Psychologist
            - More than 1 WTE Chronic Pain Physiotherapists
            - Other team members as appropriate to ensure appropriate interdisciplinary and multi-speciality care for patient needs
            - Proven experience to manage their specific group of specialist patients

- Link to other source of advice
    - Occupational Health and Return to work (Box 24)
    - Spinal and Radiology MDT
    - Close working relationships with speciality fields, such as neurosurgery
    - Written Guidance (see refs)

- Entry criteria including necessary investigations / results
    - Patients can be referred from specialist level care pain management consultants or from other clinicians.
    - Normally the patient will have completed a pain management programme but this may not always be appropriate if it clear that specialised care is what is required.
    - The referral pathway may be agreed more locally to reflect existing services configuration. Details of this local agreement should be appended to the service specification.
    - Groups of patients may include (NHS England's SPS Service Specification D07):
        - People in pain where pain is very severe and distressing to patients, carers (including health care professionals), multiple physical and psychological

problems, significant psychological disorder, significant social instability, high physical disability/very limited mobility, persistently high service use, interpersonal problems with providers or consistent treatment dissatisfaction, multiple treatment failures.
    - Pain not only in the spine with complex needs
    - Drug dependency and abuse with drugs used for management of their pain
    - Pain related psychological and psychosocial problems that significantly complicate pain symptoms and rehabilitation
    - Severe disability possibly requiring inpatient PMP needs
    - Where treatment also requires a multi-speciality approach, or some of the time a fully integrated or "interdisciplinary" team approach. Often this is shared care with primary and secondary care that requires a dedicated Specialised Pain Management Service
    - Patients with complex pain and pain-associated disability who require the provision of the gateway to those procedures/ specialised treatments or interventions/very high cost drugs that would not be offered by local clinicians.

- Exit Criteria
    - Previously undiagnosed Pathology
    - Local specialist clinics, community services or patients empowered to manage the condition for referral

- Essential referral information
    - From specialist pain management services

- Patient Assessment
    - Interdisciplinary pain team assessment. An interdisciplinary team is an integrated working group where each clinical individual (which should include access to others such as pharmacists and occupational therapists) has a high level of expertise in different aspects of management of patients with complex pain.
    - Multispecialty pain team assessment. A multispecialty pain team is a team of speciality experts that represent different disciplines involved in the assessment and management of pain, associated illnesses, and consequences for daily functioning

- Shared Decision Making / Patient Choice
    - Self-management (Box 5)
    - Specialist Pain Service (Box 16)
    - As this is a service for people with chronic long term conditions, shared care arrangements are a vital part of the care pathway.
    - Specialised Service Providers will establish robust protocol with referring clinicians in order that the services are able to discharge patients appropriately. It is not envisaged that patients will remain in the specialised service indefinitely but that they will move back to a managed programme/partnership with local services, although they might be reviewed by the tertiary service.

- Interventions
    - Specialised Pain Management Program (PMP). Such cases require individuality of care provision for pain associated with these complicated and often unusual disorders that are not seen regularly enough in secondary care to develop treatment protocols.
        - Provide in patient support particularly around the management of pain problems of high medical and psychological complexity, and around the use of controlled drugs.
        - Provide psychological and behavioural interventions that support patients and their carers in managing their pain, enabling them to lead more normal lives with reduced disability

        - Treatments involving complex manipulation of medication under consistent supervision in an inpatient setting. This can include opioids.
        - Highly specialised centres may provide dedicated Pain Management Programs for this complex patient population.
    - Specialised Drugs
        - Examples would include patients where the local specialist PMC felt that they needed support; possibly, because of co-morbidity complicating medication management, prescribed or illicit drug usage complicating prescription and for opinions around more expensive medications.
    - Specialised interventions
        - Examples would include patients where the local specialist PMC felt that they needed support; possibly, interventions in a patient with complex bio-psycho social needs, e.g. complex or re-do neuro-modulation and others as appropriate
        - Gateway to those procedures/specialised treatments or interventions/very high cost drugs that would not be offered by local clinicians. Patients would require ongoing review. Examples would include neuromodulation and Intrathecal pumps. Providing there is appropriate clinical governance, such services do not have to be provided in a specialised service.

- Measurement point for quality standard and outcome, PROMS.
    - EQ5D, condition specific disability scale, numeric rating scale for pain and patient experience
    - As per Specialised Pain Management Services defined by NHS England's SPS Service Specification D07 Appendix one. These cover1 NHS Outcomes Framework Domains 1-5.

- Self-Management
    - Reduce recurrent inappropriate admissions and other health care services by promoting self-management
    - Increase social and physical functioning, promoting return to work and maintaining productivity through employment
    - Promote independence and well-being for patients through the provision of structured self-management support, with concomitant benefits of fewer inappropriate medical appointments and readmissions.

- Co-morbidity
    - Mental Health and social issues.
    - Drug addiction
    - Cardiac
    - Diabetes
    - Musculoskeletal (other than back pain)
    - Obesity
    - Neurological
    - Respiratory

- Definition satisfactory result
    - Patient reported improvement
    - Patient choice to self-manage
    - Patients and their carers supported in managing their pain, enabling them to lead more normal lives with reduced disability
    - Increased social and physical functioning, promoting return to work and maintaining productivity through employment
    - Improved ability of clinicians in managing the pain element of their patients care
    - Reduced recurrent inappropriate admissions and other healthcare services by promoting self-management

- Evidence base and its level of evidence.
    - As per Specialised Pain Management Services defined by NHS England's SPS Service Specification D07 and the documents referenced within that; especially those published by The Royal College of Anaesthetists and other Royal Colleges, British Pain Society (including British Pain Society Maps of Medicine Pathways), The International Association for the Study of Pain, and NICE. These may change from time to time.

References

- National Institute for Health and Clinical Excellence (NICE) Guidance is as set out below
    - NICE (October 2008) 'Spinal cord stimulation for chronic pain of neuropathic or ischaemic origin, NICE Technology Appraisal (TA) TA159', this was reviewed in November 2013 and proposal states this will move to the static list of TAs.
    - NICE (2016). Low back pain and sciatica in over 16s: assessment and management (NG59). London. https://www.nice.org.uk/guidance/ng59:
    - NICE (2009) Management of long-term sickness and incapacity for work. Public Health Guidance 19. London:
    - NICE (2014) Neuropathic pain: the pharmacological management of neuropathic pain in adults in non-specialist settings. Clinical Guideline (CG) 173
- Available from the Royal College of Anaesthetists – www.rcoa.ac.uk
    - Royal College of Anaesthetists (November 2010) Best practice in the management of epidural analgesia in the hospital setting
    - Faculty of Pain Medicine 2015. Core Standards for Pain Management Services in the UK.
    - Royal College of Anaesthetists (2006) 'Raising the standard: a compendium of audit recipes: chronic pain services'
    - Opioids Aware: A resource for patients and healthcare professionals to support prescribing of opioid medicines for pain. http://www.rcoa.ac.uk/faculty-of-pain-medicine/opioids-aware.
- Available from Royal College of Physicians
    - Goebel A, Barker C, Turner-Stokes L, Guideline Development Panel. Complex Regional Pain Syndrome in adults: UK guidelines for diagnosis, referral and management in primary and secondary care. London, Royal College of Physicians, May 2012. http://www.rcplondon.ac.uk/resources/complex-regional-pain-syndrome-guidelines
- The BPS published 5 Pain Patient Pathway Maps using best evidence where available for the care of pain patients in collaboration with Maps of Medicine. http://bps.mapofmedicine.com/evidence/bps/index.html The Pathways are:
    - Primary Assessment and Management. (Focused on community care)
    - Spinal pain – low back pain and radicular. (Community and secondary care, leading into specialised care)
    - Musculoskeletal non-inflammatory. (Community and secondary care, leading into specialised care)
    - Neuropathic Pain. (Community and secondary care, leading into specialised care)
- Available from the International Association for the Study of Pain (IASP)– www.iasp-pain.org:
    - International Association for the Study of Pain (2009) 'Desirable characteristics for pain Treatment Facilities'
    - Recommendations for Wait-Times for Treatment of Pain
    - IASP Declaration on Torture
    - Recommendations for Pain Treatment Services
    - Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non- Cancer Pain
    - IASP Classification of Chronic Pain
    - Desirable Characteristics of National Pain Strategies 2010

- Available from the Royal College of Paediatrics and Child Health:
    - Commissioning Tertiary and Specialised Services for Children and Young People (2004)

Box 17 – Medial Branch Block +/- Radiofrequency Denervation

Contents Flow Chart

Overview

Radiofrequency denervation is a minimally invasive and percutaneous procedure performed under local anaesthesia or light intravenous sedation. Radiofrequency energy is delivered along an insulated needle in contact with the target nerves. This focused electrical energy heats and denatures the nerve. This may allow axons to regenerate with time, requiring the repetition of the radiofrequency procedure.

- Time Line
  - People with moderate/severe chronic low back pain:
    - With clinical features are suggestive of a facet joint component
    - Who have had insufficient improvement despite comprehensive management earlier in the pathway including CPPP (unless they do not meet the inclusion criteria)

- Definition of skills / competencies required
  - Has clinical skills to select appropriate patients
  - Trained in the procedure and considered competent to perform
  - Radiofrequency denervation is a technically demanding procedure and should only be performed by appropriately trained clinicians.
  - Able to take informed consent
  - Ability to detect and manage complications

- Link to other sources of advice
  Spinal surgery service for management of complications

- Entry criteria
  - Consider referral for assessment for radiofrequency denervation for people with chronic low back pain when:
    - non-surgical treatment has not worked for them **and**
    - the main source of pain is thought to come from structures supplied by the medial branch nerve **and**
    - they have moderate or severe levels of localised back pain (rated as 5 or more on a visual analogue scale, or equivalent) at the time of referral.

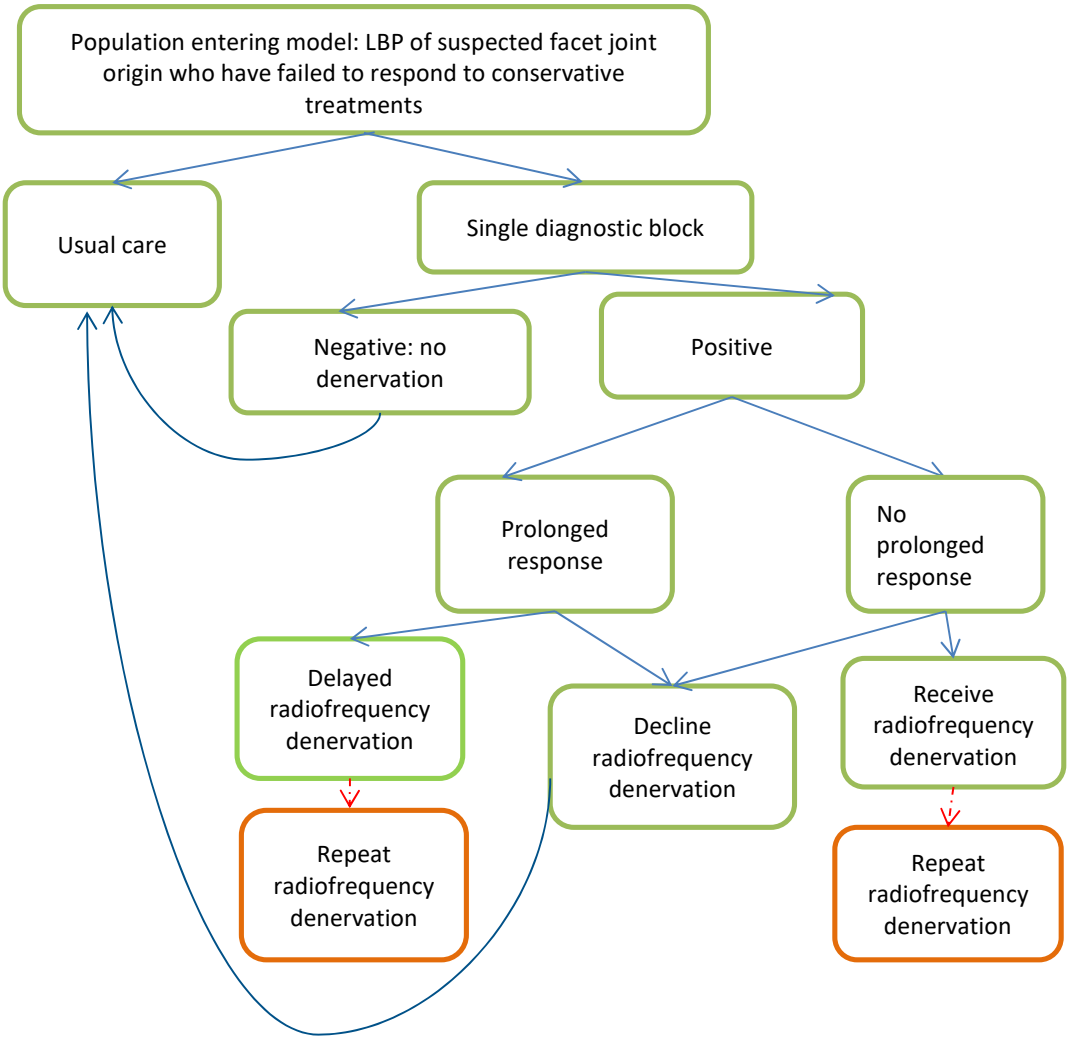
    - Clinical features suggestive of a facet joint component:
      - Increased pain unilaterally or bilaterally on lumbar para-spinal palpation
      - Increased back pain on 1 or more of the following:
        - extension (more than flexion)
        - rotation
        - extension/side flexion
        - extension/rotation
      - AND
        - No radicular symptoms
        - No sacroiliac joint pain elicited using a provocation test.
      - Only perform radiofrequency denervation in people with chronic low back pain after a positive response to a diagnostic medial branch block with 1 ml or less of local anaesthetic at each level (No steroids)
      - Do not offer imaging for people with low back pain with specific facet joint pain as a prerequisite for radiofrequency denervation.

- Exclusion Criteria
  - Local or systemic infection

- Substantial anticoagulation is a relative exclusion: temporary stop or covering anticoagulation
- Patient unwilling/lack of cooperation or unable to tolerate procedure
- No repeat radiofrequency denervation should be considered if the benefit is for less than 16 months (NICE NG59 cost-effectiveness)

- Exit criteria
  - Successful injection
  - Unable to tolerate injection
  - Declined Radiofrequency Denervation

Figure 1: Pathway in the model



- Essential referral information
  - Entry criteria requirements
    - The features include: Increased pain unilaterally or bilaterally on lumbar paraspinal palpation
    - Increased back pain on 1 or more of the following:
      - extension (more than flexion)
      - rotation
      - extension/side flexion
      - extension/rotation
      - No radicular symptoms
      - No sacroiliac joint pain elicited using a provocation test
  - Imaging investigation (No MRI needed)

- Radiofrequency denervation is a technically demanding procedure and should only be performed by appropriately trained clinicians
- Possible confounding factors – previous surgery, problems with previous injections
- Medication (especially anticoagulation) and allergies (especially contrast agents)

NB- If diagnostic block is carried out by a different clinician to the clinician performing Radiofrequency, the radiological imaging, volume and type of injection used and the patient pain diary should be sent with the referral. Formal local clinical governance arraignments should be in place to ensure safe assessment and continuity of care in this situation.

- Shared Decision Making / Patient Choice
  - Self-management (Box 5)
  - Specialist Triage (Box13)
  - Pain Management Services (Box 16)

- Interventions
  - The British Pain Society / Faculty of Pain Medicine has produced and is producing further guidelines for the conduct of spinal injections and patient information leaflet, which should be adhered to by trained and competent practitioners and be performed under appropriate imaging.
  - Diagnostic medial branch of the posterior primary ramus nerve blocks with 1ml or less of local anaesthetic at each level (no steroids) are recommended as a diagnostic test before any destructive lesioning.
  - There may be sustained benefit from diagnostic local anaesthetic blocks especially when they are administered in the context of multidisciplinary rehabilitation, which is strongly recommended.
  - Radiofrequency denervation of the medial branch nerves produces a more prolonged analgesic effect but this must be balanced against the potential for more significant complications.

- Measurement point for quality standard and outcome, PROMS.
  - EQ5D, ODI and VAS before and 4-8 weeks, 6 months, 1 and 2 years after the procedure (NICE 2016 research consideration)
  - Number and type of complications including wrong level / side

- Self-Management.
  - Self-directed return to normal employment, occupation, social and other activities Patient information including the Back Book
  - GP or over the counter medication

- Definition satisfactory result.
  - Length of pain relief
  - Return to work / occupation
  - Improved EQ5D / Back Specific Disability Score
  - Patient reported improvement / satisfaction
  - Patient choice to self-manage

- Evidence base and its level of evidence.
  - NICE NG59 2016. Low back pain and sciatica in over 16s: assessment and management (NG59). London. https://www.nice.org.uk/guidance/ng59
  - *British Pain Society and Faculty of Pain Medicine of the Royal College of Anaesthetists. Standards of good practice for medial branch block injections and radiofrequency denervation for low back pain. January 2014*. https://www.britishpainsociety.org/static/uploads/resources/files/mbb_2013_-_FINAL.pdf
  - http://bps.mapofmedicine.com/evidence/bps/low_back_and_radicular_pain3.pdf

- Provision of time line.
  - Patients should be seen within 2 weeks of referral

- Definitions of skills / competencies required.
  - Essential Competencies:
    - Knowledge and understanding of clinical care pathways for people with back pain and radicular pain and have an understanding of interdisciplinary working.
    - Knowledge and understanding of clinical care pathways for people with neurogenic claudication.
    - Formulate working and differential diagnoses and a prognosis.
    - Monitor and re-assess patients whilst under their care.
    - Communicate with patients and involve them in decisions about their care, set goals and objectives of care.
    - Obtain informed consent from the patient, including explaining the options for care, the purpose of procedures, the risks and potential complications.
    - Deliver a range of treatment packages that may include advice, self-management, exercise, manual therapy, and psychologically informed care.
    - Understand and evaluate the quality of care delivered.
    - Understand and interpret symptoms and signs that may indicate serious pathology (red flags).
    - Advise patients on the appropriate use of pain relief and pain-modifying medications and other pain management strategies.
    - Recognise the need to work within their scope of practice.

  - Essential skills
    - Ability to undertake a medical history, orthopaedic and neurological assessment.
    - Ability to undertake a psychosocial assessment of the patient.
    - Ability to identify “red flag” pathologies; co-morbidities; psychosocial barriers (yellow flags) to recovery (including application of stratification tools where appropriate).
    - Ability to select and refer patient to appropriate services.
    - Ability to communicate diagnosis and care plan to patients and colleagues as required.
    - Ability to undertake specific Patient Reported Outcome Measures (PROMs) and understand the significance of these.
    - Advise patient about the signs and symptoms of a developing Cauda Equina syndrome and what actions that they should take (medical emergency).

- Link to other source of advice.
  - Involvement of other health and social care professionals. This may be a dedicated review service e.g. boxes 8, 11, 13 or specific services relevant to pathway
  - Employment services (Box 24)
  - Pain services (Box 16)
  - Radiology
  - Spinal on-call service
  - Spinal surgical service

- Entry criteria.
  - Patients with radicular pain referred from Box (8)

- Exit Criteria.
  - Emergency referral to Spinal on-call Service if suspected spinal cord compression or cauda equina syndrome (Box 6).

- Urgent referral to Spinal Surgery Service or urgent MRI if suspected tumour or infection (Box 6).
- Severe or progressive motor deficit (e.g. foot drop) should be discussed with the spinal on-call service

- Essential referral information.
  - Duration, severity and location of leg pain
  - Medical history
  - Current medication
  - Treatment so far including analgesia tried
  - EQ5D & ODI at initial assessment (Box 8)

- Patient assessment.
  - Full patient assessment already performed at assessment (Box 8).
  - History and examination to define manual therapy / conservative therapy.
  - Exclude symptoms of spinal cord compression and cauda equina.
  - Effect of previous treatments.
  - Formulating an understanding of the patient's perceptions of pain, disability, and social disability, levels of anxiety/depression, fear/avoidance behaviour and likely improvement.
  - Assessing patient's expectations and beliefs and the impact of their condition on social interactions and work.
  - Goal setting.

- Shared Decision Making / Patient Choice.
  - Discharge if symptoms settle (Box 5) with staged return to work (Box 24) and information on self-care and core therapies.
  - Specialist triage review (Box 8) if symptoms do not improve or worsen with conservative therapy

- Interventions.
  - Advice and promoting self- management
  - Discuss analgesia and other pain management strategies, ensuring patient has access to prescribing clinician.
  - Provide consistent message to remain active and foster a positive attitude with realistic expectations.
  - A package of care tailored to the individual in terms of treatment options and frequency of treatment delivery will be considered taking account of patient expectations and preferences. Low back pain related distress, anxiety, fears, beliefs and expectations should be addressed as an integral part of the package of care.
  - It is anticipated that the number of core therapy treatment sessions will vary between patients with many needing short periods of care. If there is insufficient response to the package of core therapy then a dedicated review should take place with the specialist triage practitioner.
  - Consider treatment options that could include:
    - **Exercise**: a group exercise programme (biomechanical, aerobic, mind–body or a combination of approaches) within the NHS for people with a specific episode or flare-up of low back pain with or without radicular pain. Take people's specific needs, preferences and capabilities into account when choosing the type of exercise.
      - 1-1 if group is not available or appropriate
    - **Manual therapy**: manual therapy (spinal manipulation, mobilisation or soft tissue techniques such as massage) for managing low back pain with or without radicular pain, but only as part of a treatment package including exercise, with or without psychological therapy.

        - Low intensity **CPPP**: psychological therapies using a cognitive behavioural approach for managing low back pain with or without radicular pain but only as part of a treatment package including exercise, with or without manual therapy (spinal manipulation, mobilisation or soft tissue techniques such as massage).
    - Some interventions for neurogenic claudication:
        - Wheeled walker, pacing, and frequent sitting/bending.
    - NICE 2016 recommended against epidural injections for neurogenic claudication with central spinal stenosis
    - For managing low back pain with or without sciatica, NICE 2016 recommended **against**:
        - Belts or corsets
        - Foot orthotics or rocker sole shoes
        - Traction
        - Acupuncture
        - Ultrasound
        - Percutaneous electrical nerve stimulation (PENS)
        - Transcutaneous electrical nerve stimulation (TENS)
        - Interferential therapy

- Measurement Point for Quality Standard and Outcome, PROMS.
    - EQ5D, ODI, VAS before and at end of treatment
    - PCOMS

- Self-Management.
    - Information should be given to patients.
    - Self-directed exercise programme
    - Self-directed relaxation techniques
    - Self-directed return to work
    - Self-directed return to normal social and leisure activities
    - GP or over the counter medication

- Co-morbidity
    - Co-morbidities should be identified and consideration given to how care may need to be modified. Patients should be referred or signposted appropriately.

- Definition of satisfactory result:
    - Clinically significant improvement in PROMs.
    - Return to usual activities (including return to work).
    - Achieving patient specific goals
    - Improved patient self-management
    - High levels of patient satisfaction with care (PCOMs).
    - Number of patients discharged and number referred for further investigation / management

- Evidence base and level of evidence.
    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) www.nice.org.uk/guidance/ng59/evidence/full-guideline-assessment-and-noninvasive-treatments-2726158003
    - NICE CG173 Neuropathic pain in adults: pharmacological management in non-specialist settings (2014) https://www.nice.org.uk/guidance/cg173
    - hcks.nice.org.uk/sciatica-lumbar-radiculopathy#!scenariorecommendation
    - cks.nice.org.uk/sciatica-lumbar-radiculopathy#!diagnosissub
    - cks.nice.org.uk/sciatica-lumbar-radiculopathy#!supportingevidence1:8
    - www.supply2health.nhs.uk/AQPResourceCentre/AQPServices/PTP/Pages/BackNeckPain.aspx

- Patient experience in adult NHS services: improving the experience of care for people using adult NHS services NICE CG138. http://www.nice.org.uk/nicemedia/live/13668/58284/58284.pdf
- Patient experience in adult services NICE QS15 http://guidance.nice.org.uk/QS15
- The current evidence base for the diagnosis and management of sciatica (lumbar radiculopathy) can be found at http://cks.nice.org.uk/sciatica-lumbar-radiculopathy#!topicsummary

Box 19 - Imaging in Patients with Radicular Pain

Contents Flow Chart

- Provision of time line
  - Within 4 weeks for elective MRI (referral to reporting)
  - Within 1 week for urgent patients (red flags)
  - As an emergency where required (Hospitals offering an emergency spinal service)

- Definition of skills / competencies required
  - Ability to report the MRI scan in a way which is easy to comprehend which nerve roots are or may be compressed
  - Ability to perform CT or MRI under general anaesthetic when necessary
  - Ability to normalise degenerative change related to normal aging to minimise the morbidity associated with MRI reports.

- Link to other sources of advice.
  - GP in case sedation required for mild claustrophobia

- Entry criteria.
  - Correctly completed referral
  - Do not routinely offer imaging in a non-specialist setting for people with low back pain with or without radicular pain.
  - Consider imaging in specialist settings of care (for example, a musculoskeletal interface clinic or hospital) for people with low back pain with or without radicular pain only if the result is likely to change management

- Exit Criteria
  - There is no evidence to suggest MRI scans pose a risk during pregnancy. However, as a precaution MRI scans are not usually recommended during pregnancy, particularly in the first three months.

- Essential Referral Information.
  - The MRI department should be advised of any patient with an implanted metal device, so that the appropriate safety assessment can be made. The majority of patients with implanted surgical metalwork such as hip or knee replacements, orthopaedic metal plates and screws can safely undergo MRI, though it is often advised that unless clinically urgent, imaging is not carried out in the immediate post-operative period. A delay of 6 weeks is considered prudent.
  - Side of radicular pain
  - Location of pain / suspected nerve root involved
  - Previous surgery
  - Suspicion of other pathology e.g. Spondylolysis

- Patient Assessment
  - Assess ability to have and tolerate an MRI scan

- Interventions / Imaging Protocols
    - Most cardiac pacemakers are not MRI compatible. Many intracranial devices, clips, cochlear implants and intra-spinal stimulators are also not compatible. Some cardiac valves and vascular implants are contraindicated, so all devices have to be individually assessed. This assessment is carried out by the MRI department referring to manufacturers' recommendations and safety lists
    - MR imaging of the lumbar spine should be carried out on equipment of sufficient resolution to reliably demonstrate the relevant anatomical structures and pathological processes.
    - The standard protocol includes a sagittal T1 and sagittal T2 weighted image set. (The latter can also be a STIR or Fat saturated T2 weighted image set). A minimal additional requirement is a set of axial T2 weighted images, generally acquired through the lowest 3 levels, adding any additional levels indicated by the clinical features. For example, if high lumbar neural compression is suspected additional axial images are carried out at upper lumbar levels. Many protocols also include an axial T1 weighted image set through the same levels to increase the sensitivity of detection of lateral disc herniation.
    - Computed tomography is an alternative imaging technique and may be used in patients with radicular symptoms in whom MRI is contraindicated. Axial images of the lower three disc spaces are acquired using a soft tissue algorithm and images are displayed using both bone and soft tissue window settings. CT is less sensitive than MRI for the detection of nerve root compression but offers an adequate imaging option when MRI is contraindicated.
    - A system must be in place to ensure unexpected and expected findings are quickly reported back to the referral source with accurate reporting of potential imminent spinal cord or cauda equina compression to guide the referrer on the urgency of onward referral.
    - Facility for image linking of images and report to external spinal services.

- Measurement point for quality standard and outcome
    - Mean wait for MRI from referral to report being sent.
    - % missed reporting of serious spinal pathologies (tumours, fractures etc.)

- Evidence base.
    - NICE (2016). Low back pain and sciatica in over 16s: assessment and management (NG59). London. www.nice.org.uk/guidance/ng59/evidence/full-guideline-assessment-and-noninvasive-treatments-2726158003
    - Royal College of Radiologists Referral Guidelines
    - http://nww.irefer.nhs.uk/
    - www.irefer.scot.nhs.uk/
    - MRI Safety Website www.mrisafety.com

Box 20 - Non-concordant Imaging

Contents Flow Chart

Overview
In patients with suspected lumbar radiculopathy based on history and clinical examination, the MRI report may suggest no nerve root compression, nerve root compression on the opposite side or compression of a nerve root which is not concordant with the clinical findings. It must be emphasised that the information below should only be applied when the requesting clinician has a high index of clinical suspicion that the patient has lumbar radiculopathy.
In a patient with a spinal deformity (scoliosis / spondylolisthesis), consideration should be given to nerve roots which may become compressed in a standing or sitting position as the deformity increases whilst not compressed in a supine (scanning) position.

The MRI and clinical details should be reviewed at the Spinal MDT.

- If the MDT feels there is no nerve root compression, the nerve root compression is too non-concordant with the clinical findings or the only nerve root compression is on the opposite side then surgical management is not an option. Other causes of the symptoms should be excluded and Neurology referral should be considered. Otherwise, referral to Conservative Therapies (Box 18), Pain Management (Box 16) or Discharge / Self-Management (Box 5). This will depend on symptom severity, patient choice and patient expectations / goals.
- If the MDT feels there is 'possible' concordant nerve compression or the nerve root compressed may be responsible for the clinical findings then nerve root injection (Box 22) or Surgery (Box 23) may be an option.

- Evidence Base.
  - Kovacs FM, Royuela A, Jensen TS, Estremera A, Amengual G, Muriel A, Galarraga I, Martínez C, Arana E, Sarasíbar H, Salgado RM, Abraira V, López O, Campillo C, del Real MT, Zamora J. Agreement in the interpretation of magnetic resonance images of the lumbar spine. Acta Radiol. 2009 Jun; 50(5):497-506.
  - Jensen MC1, Brant-Zawadzki MN, Obuchowski N, Modic MT, Malkasian D, Ross JS. Magnetic resonance imaging of the lumbar spine in people without back pain. N Engl J Med. 1994 Jul 14;331(2):69-73.
  - French SD, Green S, Buchbinder R, Barnes H. Interventions for improving the appropriate use of imaging in people with musculoskeletal conditions http://onlinelibrary.wiley.com/o/cochrane/clabout/articles/EPOC/frame.html
  - Kader DF, Wardlaw D, Smith FW. Correlation between the MRI changes in the lumbar multifidus muscles and leg pain. Clinical Radiology, 55; 145-149.
  - van der Windt DAWM, Simons E, Riphagen II, Ammendolia C, Verhagen AP, Laslett M, Devillé W, Deyo RA, Bouter LM, de Vet HCW, Aertgeerts B. 2011 http://summaries.cochrane.org/CD007431/physical-examination-for-the-diagnosis-of-lumbar-radiculopathy-due-to-disc-herniation-in-patients-with-low-back-pain-and-sciatica-a-systematic
  - SD Boden, DO Davis, TS Dina, NJ Patronas and SW Wiesel Abnormal magnetic-resonance scans of the lumbar spine in asymptomatic subjects. A prospective investigation. J. Bone Joint Surg. Am. 72:403-408, 1990.
  - Steffens D, Hancock MJ, Maher CG, Williams C, Jensen TS, Latimer J. Does magnetic resonance imaging predict future low back pain? A systematic review. Eur J Pain. 2013 Nov 26. doi: 10.1002/j.1532-2149.2013.00427.x.
  - Jensen TS, Albert HB, Sorensen JS, Manniche C, Leboeuf-Yde C. Magnetic resonance imaging findings as predictors of clinical outcome in patients with sciatica receiving active conservative treatment. J Manipulative PhysiolTher. 2007 Feb;30(2):98-108.

Box 21 - Concordant imaging

Contents Flow Chart

Overview
This is where the imaging is supportive of the clinical findings.

The main disorders likely to be identified in the radicular pathway include intervertebral disc prolapse, spinal stenosis and spondylolisthesis. Occasionally red flag conditions will be diagnosed when not clinically suspected.

The imaging will be reviewed by the practitioner responsible for Radiculopathy Assessment and Initial Management (Box 8). This clinician must be familiar with the different terminology used to report nerve or cauda equina compression

- Provision of time line.
  - Within 2 weeks of the date of imaging

- Definition of skills / competencies required
  - Essential competences: As Box 3, 9, 11 & 13

  - Essential Skills: As Box 3, 9, 11 & 13

- Link to other source of advice: In addition to those in Box 3
  - Radiology
  - Spinal and Radiology MDT
  - Pain Management Services including CPPP and psychology (Box 12, 16)
  - Spinal Surgery Service
  - Spinal on-call service

- Entry criteria
  - Imaging for suspected radiculopathy

- Exit Criteria
  - Suspected metastatic spinal cord compression, cauda equina syndrome, or infection.
  - Radiologically confirmed tumour, infection, acute fracture or spinal inflammatory disease.
  - Non-spinal presentation
  - Choice: self-management

- Patient Assessment (As box 3)
  - Patient expectations and beliefs
  - Comprehensive neurological examination including long tract signs
  - Medical co-morbidities

- Shared Decision Making / Patient Choice
  - Self-management (Box 5)
  - Nerve root block/epidural (Box 22)
  - Radicular surgical opinion/surgery (Box 23)
    - Do not allow a person's BMI, smoking status or psychological distress to influence the decision to refer them for a surgical opinion for radicular pain.
  - Conservative therapy for radicular pain (Box 18)
  - NICE 2016 recommended against epidural injections for neurogenic claudication with central spinal stenosis

- Measurement point for quality standard and outcome, PROMS.
    - EQ5D and ODI
    - Global rating of progress.

- Self-Management
    - As box 8

- Co-morbidity
    - As box 8

- Definition satisfactory result
    - Patient reported improvement
    - Successful return to normal activities including work
    - Patient choice to self-manage

- Evidence base and its level of evidence.

Box 22 - Nerve Root Block/Epidural

Contents Flow Chart

Overview.
Injection of depot preparations of steroid usually with local anaesthetic has an established value in a variety of acute and chronic pain problems associated with inflammatory, compressive or post-surgical pathology in the lumbosacral spine, where leg pain is the predominant symptom.

NICE CG59 in the short form advice mentions only epidural injection, but the main recommendations make it clear that nerve root block is included.

- Time Line
  - For severe, non-controllable radicular pain in prolapsed intervertebral disc early in the clinical course for symptom control.
  - For treatment of lumbar radicular pain with the aim of avoiding surgery – patient and/or clinician choice.
  - Do not use epidural injections for neurogenic claudication with central spinal stenosis
  - Utility of diagnostic lumbar nerve root injections has not been fully established.

- Definition of skills / competencies required
  - Trained in the procedure and considered competent to perform
  - Able to take informed consent
  - Ability to detect and manage complications
  - Knowledge of bridging protocols for managing patients on anti-coagulation and appreciation of the risks
  - Appreciation of segmentation abnormalities in the lumbar spine which may increase the chance of wrong level nerve root blocks

- Link to other sources of advice
  Spinal on call service for management of complications

- Entry criteria
  - Clinician and patient agreement for therapeutic injection for moderate or severe lumbosacral radicular pain (compressive or inflammatory).
  - Lack of suitability of alternative treatments e.g.
    - Patient unfit for surgery/poorly defined surgical target
    - Patient unable to tolerate neuropathic pain medications – especially elderly.
    - Informed consent

- Exclusion Criteria
  - NICE NG59 recommended against epidural injections for neurogenic claudication in people who have central spinal canal stenosis.
  - Local or systemic infection
  - Patient unwilling/lack of cooperation or unable to tolerate procedure

- Exit criteria
  - Successful injection
  - Unable to tolerate injection
  - Initially successful but symptoms returning and patient wants to consider surgery (Box 23)

- Essential referral information
  - Level and side if nerve root block
  - Imaging investigation (usually MRI)
  - Possible confounding factors – previous surgery, problems with previous injections
  - Medication (especially anticoagulation) and allergies (especially contrast agents)

- Shared Decision Making / Patient Choice
    - Self-management (Box 5)
    - Specialist triage (Box 8)
    - Surgical opinion/surgery (box 23)

- Interventions
    - Consider epidural injections of local anaesthetic and steroid in people with acute and severe radicular pain.
        - Interlaminar, transforaminal or caudal epidural
        - Nerve root injection
        - Aseptic conditions and technique
        - Image guided
        - Non-ionic, water soluble contrast
        - Needle and syringe connections conform to national guidelines
    - Facet cyst disruption/aspiration.
    - Combining epidural or nerve root steroid injection therapy with appropriate medication management, physical and psychological therapies will maximise the benefit.

NICE 2016 recommend against:

    - Epidural injections for neurogenic claudication in people who have central spinal canal stenosis.

- Measurement point for quality standard and outcome, PROMS.
    - EQ5D, ODI and VAS before and 4-8 weeks after the procedure
    - Number and type of complications including wrong level / side
    - Number of patients going on to have a surgical procedure

- Self-Management.
    - Self-directed return to normal Employment, occupation, social and other activities Patient information including the Back Book
    - GP or over the counter medication

- Definition satisfactory result.
    - If for severe early pain
        - length of time with tolerable pain
        - % referred for surgery
    - If as treatment for lumbar radicular pain with the aim of avoiding surgery
        - % avoiding surgery
    - Return to work / occupation
    - Improved EQ5D / Back Specific Disability Score
    - Patient reported improvement / satisfaction
    - Patient choice to self-manage

- Evidence base and its level of evidence.
    - NICE NG59 Low back pain and sciatica in over 16s: assessment and management (2016) https://www.nice.org.uk/guidance/ng59/evidence/full-guideline-invasive-treatments-2726157998
    - http://bps.mapofmedicine.com/evidence/bps/low_back_and_radicular_pain3.pdf
    - Faculty of Pain Medicine The Royal College of Anaesthetists (RCOA). Recommendations for good practice in the use of epidural injection for the management of pain of spinal origin in adults. London: RCOA; 2010. Available from: http://www.rcoa.ac.uk/system/files/FPM-EpiduralInjection.pdf
    - Lewis R, Williams N et al (2011) The clinical effectiveness and cost-effectiveness of management strategies for sciatica: systematic review and economic model. HTA report Vol. 15: No. 39

Box 23 - Spinal Surgical Opinion / Surgery

Contents Flow Chart

- Provision of time line (from onset of symptoms):
  - Very severe radicular pain which is not controllable with analgesia or nerve root injection may require early surgery likely to be at the 1-3 week stage
  - Early surgery may also be required if accompanied by major radicular weakness
  - Otherwise, 8-12 weeks if non-tolerable radicular pain
  - Later surgery may occur in patients with symptoms of fluctuating severity
  - Neurogenic claudication may be six months

- Definition of skills / competencies required.
  - Same as box 8 and:
    - Interpretation of MRI scan
    - Ability to decide the optimal surgical procedure which may include instrumented stabilisation/fusion
    - Ability to discuss the risks and benefits of surgery versus nerve root/epidural injection versus continue conservative management specific to the patient and consider medical co-morbidities and other factors which may influence the risk: benefit ratio.
    - Ability to perform the possible surgical procedures / gain informed consent / manage any complications
    - Protocol for level checking in theatre
    - Availability of operating theatre, equipment including fluoroscopy for level check and access to MRI imaging for any post-operative complications

- Link to other source of advice:
  - Advice regarding cauda equina syndrome
  - Written information on management options: pain management, nerve root injection, surgery

- Entry criteria including necessary investigations / results
  - From Concordant Imaging (Box 21)
  - From conservative Therapy (Box 18) or Pain Management (Box 16) if the patient decided on that initial management from Box 21
  - From Nerve root block / epidural (Box 22)
  - The patient should be willing to consider a surgical option dependant on risk / benefit analysis

- Exclusion criteria
  - Medically too unfit for anaesthetic
  - Patient does not wish to consider surgery
  - Non-concordant imaging (Box 20)

- Exit Criteria
  - Completion of surgery
    - Discharge (Box 5)
    - Pain Management (Box 16)
    - May require further imaging if initially successful then deterioration to ensure no complications – Imaging (Box 19)

- Essential referral information
  - The patient should have had an MRI scan or CT scan if unable to have an MRI scan
  - MRI report and imaging to be available
  - Full medical history and medications to be available

- Patient Assessment – as for box 8:
    - History – see above
    - Examination – see above
    - Assessment of severity of symptoms
        - Ask patient if tolerable, non-tolerable and whether improving, worsening or plateaued
        - Use of Oswestry Disability Index (ODI), VAS scores for leg and back pain, EQ-5D

- Shared Decision Making / Patient Choice.
    - Perform surgery according to Risk / Benefit assessment
    - Pain Management (Box 16)
    - Nerve root block / Epidural (Box 22)
    - Discharge (Box 5)

- Interventions
    - Decompression / Discectomy
    - Decompression / Discectomy + Instrumented fusion may be required if:
        - Instability e.g. spondylolisthesis, spinal deformity
        - Multiple revision surgery
        - Significant back pain accompanying radicular pain with localised degenerative change

- Measurement point for quality standard and outcome, PROMS:
    - Surgical complications
    - EQ5D, ODI, VAS before surgery and at 6 months after surgery recorded on British Spine Registry
    - PREMS

- Self-Management.
    - By this stage, patients should only be considering this option after discussing surgical options.

- Co-morbidity.
    - Cardiac
    - Diabetes
    - Mental Health
    - Musculoskeletal (other than back pain)
    - Obesity
    - Neurological
    - Respiratory

- Definition satisfactory result.
    - Number (and conversion rate %) of patients for surgery
    - Improvement in EQ5D, ODI, VAS at 6 months
    - Satisfactory PREMS
    - Surgical complication rate
    - Number return to theatre and reasons
    - Revision microdiscectomy

- Evidence base and its level of evidence.
    - Prolonged conservative care versus early surgery in patients with sciatica caused by lumbar disc herniation: two year results of a randomised controlled trial, WC Peul et al. BMJ 2008
    - Surgical versus non-operative treatment for lumbar disc herniation. JN Weinstein et al. Spine 2008
    - Lewis R, Williams N et al (2011) The clinical effectiveness and cost-effectiveness of management strategies for sciatica: systematic review and economic model. HTA report Vol. 15: No. 39

Box 24 - Occupational Health and return to Work

Contents Flow Chart

Overview

- Provision of Timeline
  - Referral to and input from Occupational Health may be taken throughout the pathway.
  - Particularly Boxes 9, 10, 11, 13, 15, 16

- Definition of skills / competencies required. This is a multi-disciplinary team.

  - Essential competences
    - Identification of barriers to early return to work
    - Development of return to work programmes
    - Excellent communication skills.
    - Goal setting
    - Creative problem solving
    - Understanding cooperation, collaboration between workers, employers, GP and Specialist back pain practitioners
    - Knowledge of relevant legislation on disability, human rights, employer's responsibilities etc.
    - Knowledge of LBP prevention i.e. activity based rehabilitation, remaining at work to prevent work absenteeism
    - Knowledge of red flags, yellow flags, natural history of back-pain; patient pathway, evidence based recommendations, active rehabilitation programmes and health services resources available to staff and how to access them.

  - Essential Skills
    - Motivation and reassurance
    - Shared decision making
    - Expectation management

- Link to other source of advice
  - Specialist triage review (Box 9, 11, 13)
  - Pain management services (Box 16)
  - Core therapies (Box 10)
  - Spine surgeon (Box 14)

- Entry criteria
  - Significant pain and disability from low back pain causing, or with the potential to cause, loss of time from work or modification of work patterns

- Exit Criteria
  - Not in employment

- Essential referral information
  - History of Back Pain Episode
  - Limitations on activities (bending, lifting etc.)
  - Social and work impact
  - Current pain pharmacology
  - Specific objectives of patient

- Patient Assessment
    - Impact of symptoms on activity/work disability
    - Evaluation and assessment of obstacles to recovery and return to work.
        - Physical fitness and psychophysical and psychosocial resources
        - Job demand and potential occupational risk factors-
        - physical demands of job (manual handling, lifting, bending, twisting),
        - job satisfaction, (nature of work, low control over work, monotonous, time - pressure, work relationships, perceived difficulties, patient's own beliefs)
        - Work support available.
    - Patient expectations and beliefs
    - Impact on family and social ability
    - Patient specific objectives

- Shared Decision Making / Patient Choice
    - Understanding of patient objectives
    - Tailoring of aspects of programme
    - Self-management (Box 5)
    - Specialist Triage Review (Box 9, 11, 13)

- Interventions
    - Assisting patients with low back pain (LBP) to continue working or facilitating an early return to work
    - Emphasis on returning to work as rapidly as possible, before pain free
    - Modifying work programmes i.e. negotiating
        - modified duties in more severe cases
        - graded/ pacing full return to work with time targets
    - Facilitating work organisation
        - work place adaptations,
        - pace,
        - rotation of work modified duties etc.
    - Communication between LBP health practitioners/services and the work place
    - Arrangements for getting specialist advice and psychological support
    - Education of workforce about back-care and early injury reporting
    - Staff Training Programmes
    - Early intervention (2-4 weeks), case- management and direct involvement approaches
    - Provision of health messages consistent with those delivered by health professionals involved in the patients care
    - Staff training programmes to reduce work related back injuries/ accidents
        - correct manual handling (lifting) techniques,
        - DSE assessments,
        - organisational policies,
        - Environmental improvements.
    - Provision of information and educational materials, leaflets etc.

- Measurement point for quality standard and outcome, PROMS.
    - Time to presentation
    - Return to Work or Occupation
    - days off work
    - long term absenteeism
    - loss of employment

- Self-Management
    - Self-directed return to normal Employment, occupation,
    - Patient information
    - GP or over the counter medication

- Co-morbidity
    - Cardiac
    - Mental Health
    - Musculoskeletal (other than back pain)
    - Neurological
    - Respiratory

- Definition satisfactory result
    - Return to work / occupation
    - Improved EQ5D / Back Specific Disability Score
    - Patient reported improvement
    - Patient choice to self-manage

- Evidence base and its level of evidence.
    - www.nice.org.uk/guidance/ng59

Appendix 1. Stakeholders and their nominated Representatives

Contents

NHS England, Chairman	Prof Charles Greenough, Chair of Improving Spinal Care Board
CRG Spinal Services	Mr Ashley Cole, Consultant Spine Surgeon, Chair of Improving Spinal Care Board
CRG Specialised Pain Services	Dr John Hughes, Consultant in Pain Medicine.
CRG Armed Forces	Dr Jonathan Leach, General Practitioner
Patient Experience	Ms Carol Long Mr Mark Underwood
Arthritis & Musculoskeletal Alliance	Mr Federico Moscogiuri, CEO ARMA
British Acupuncture Council.	Mr Nick Pahl, Chief Executive
British Assn. Spinal Surgeons	Mr Sashin Ahuja, Consultant Spinal Surgeon
British Chiropractic Association	Dr Mark Gurden, Chiropractor
Brit. Inst. Musculo-Skeletal Med.	Dr Rod Macdonald, Musculoskeletal Physician
British Orthopaedic Assn.	Mr Lee Breakwell, Consultant Spinal Surgeon
British Pain Society	Dr Sarah Love Jones, Consultant in Pain Medicine
British Psychological Society	Dr Amanda Williams, Consultant Psychologist
British Scoliosis Society	Mr Ian Nelson, Consultant Spinal Surgeon
British Society of Rheumatology	Dr. David Walsh, Consultant Rheumatologist
Chartered Society of Physiotherapy	Mrs Susie Durrell, Consultant Physiotherapist
Faculty of Pain Medicine	Dr Ganesan Baranidharan, Consultant in Pain Medicine
Institute of Osteopathy	Mr Steven Vogel, Osteopath
Improving Spinal Care Board Editor	Mrs Elaine Buchanan, Consultant Physiotherapist, NBPP
Musculo-Physiotherapist	Mrs Ruth Sephton, Musculoskeletal Physiotherapist
Public Health	Dr Su Sethi, Consultant in Public Health
Royal College of Chiropractors	Dr Mark Gurden, Chiropractor
Royal College of Radiologists	Dr. Gavin Clague, Consultant Radiologist
Royal College of GPs	Dr Martin Johnson.

Sports Medicine	Dr Nigel Jones .
Society for Back Pain Research	Dr Kika Konstantinou, Senior Clinical Lecturer / Spinal Physiotherapy Specialist
Soc. Brit. Neurological Surgeons	Mr Richard Kerr, Consultant Neurosurgeon
UK Spine Societies Board	Mr Alistair Stirling, Consultant Spinal Surgeon (Chair)
Combined CCG rep.	Ms Kate Parkin, Associate Director, Sussex Collaborative Delivery Team
NHS Specialised Commissioning	Mr David Stockdale, Responsible Commissioner
Trauma Programme of Care Board	Mr Paul May, Consultant Neurosurgeon

Appendix 2. Specialist Triage Practitioner

Contents

This functionality appears in boxes 9, 11 and 13 in the low back pain pathway. They will also appear in box 8 in the radicular pathway and will be making the decision concerning concordant and non-concordant images in boxes 20 and 21.

The individual with this functionality will be highly trained, with skills including;

- History and examination
- Diagnostic triage (red flags, Radicular pain, Mechanical back pain, Inflammatory disorders etc.)
- Ability to request scan
- Ability to interpret scan alongside the radiologists report
- Ability to direct treatment
- Understanding and employment of CBT principals
- Psychosocial assessment
- Assessment of medication
- Shared decision making
- Communication
- Expectation management

It is clearly a highly trained individual with some seniority and will be an expensive and limited resource.

The function of this individual is to direct the pathway of care and to provide the continuity that patients have clearly voiced that they would like to see. In some instances that the practitioner might be bypassed but it is to this practitioner that the pathway will return if response is insufficient or concerns are raised about diagnosis or any other matter.

Appendix 3 Outcome measures

Contents

These were recognised as an essential part of the ordinance of audit and governance of the pathway.

Four outcome measures were suggested.

- Back specific disability scale, the Oswestry Disability Index (ODI). The ODI has International recognition and has been widely used in published research in low back pain.
- The measure of cost effectiveness and cost efficiency, the EQ5D.
- A numeric pain rating scale.
- Measure of patient experience.

Red Flag Appendices

Contents

1) Red Flags Explanatory Text

Principles for Spinal Surgical emergency and urgent referrals (Red flags) and management

Introduction

Potential threat to life (spinal infection and spinal tumours, usually metastatic, or 40x less commonly primary spinal tumours) and the potential to cause paralysis define the most urgent spinal conditions.

Paralysis may result from extrinsic compression of the spinal cord (above L1) or cauda equina (below L1). Alternatively it may be due to intrinsic loss of neurological function. (Anterior spinal artery thrombosis, Guillain-Barré Syndrome, transverse myelitis, multiple sclerosis, or be mimicked by conditions such as para-neoplastic syndrome or diabetic femoral neuropathy). The history of onset and subsequent evolution of symptoms supported by examination usually indicate the likely cause, but require imaging confirmation before proceeding to further investigation, if necessary, and defining treatment options before discussing these with the patient.

The commonest causes of extrinsic neural compromise are disc prolapse, spinal metastasis, infection with abscess formation or traumatic spinal column injury. More unusual structural causes are osteoporotic fractures, fractures in ankylosing spondylitis or spontaneous epidural haematoma.

Regardless of cause patients often present with similar symptoms and signs; usually a combination of pain in the spine and if accompanied by pressure on the cord or nerve roots, in the distribution of the nerves involved, which if severe may cause alteration of spinal cord or nerve root function. In addition those with spinal metastases or infection may have more generalised symptoms of cancer or infection and corresponding alteration of blood tests Until the cause is defined it is difficult to predict the subsequent likely evolution of symptoms and what steps may be required to prevent further deterioration. MRI is the optimal mode of imaging to define the probable cause (it may be contraindicated e.g. in those with pacemakers, or aneurysm clips etc. in which event alternative imaging modalities may be required).

It is particularly important to recognise those with extrinsic neurological compromise because timely surgical decompression may prevent avoidable permanent neurological loss. For the individual patient this may cause long term disability. The relative urgency of assessment, investigation and intervention have been listed in both the primary and secondary care sectors

It is also important that if no evidence of extrinsic neural compromise is evident despite symptoms or signs of neurological deficit, prompt or emergency (dependent on degree) referral for neurological opinion should be made.

It is clearly recognised that in the context of the usual very full timetables of spinal surgical services that optimal assessment and organisation of timely investigation and intervention is often very difficult. Accordingly the DH National Spinal Taskforce report (2013) has recommended that Commissioners should fund a clinically trained spinal emergency coordinator for all acute spinal surgical services.

References

1) National Spinal taskforce report http://www.nationalspinaltaskforce.co.uk.
2) Quraishi, N.A. et al, Malpractice litigation and the Spine: NHS perspective on 235 successful claims in England. Spine 2012 21 (Suppl.2),S196-S199,.

Red Flag Appendix 2 Primary care / intermediate care: **Timelines for assessment of patients with symptoms and /or signs of neurological compromise of unknown origin (prior to MRI (or other imaging if MRI contraindicated)).**

*Please recognise that by definition this can only be regarded as **a guide** and it is imperative that with evolving neurological compromise clear instructions must be given for the type and timing of ongoing neurological assessment and the **action required** if deterioration occurs. The responsible **senior medical staff** should always be informed when patients with new or evolving neurological deficit present and again (depending on their instruction) if there is significant deterioration.*

Columns to the right in grey included to allow primary care to see timelines in secondary care

	Timelines		**Indicative Timelines for actions in secondary care**
Neurological status	**Urgency of referral (primary care) and secondary care assessment**	**Time to imaging MRI and treatment plan**	**Time to intervention**
Normal with pain only (no neurological compromise and no suspicion of tumour or infection)	Routine	Routine	Routine
Normal with pain and suspicion of tumour or infection (See below)	Urgent – MSCC coordinator	Urgent – MSCC coordinator	Depends on imaging
Minor deficit – no change last 7 days (Stable)	Routine	Routine	Routine
Minor deficit – worse or developed in last 7 days (deteriorating)	Emergency	Emergency	Dependent on imaging
Major deficit	Emergency	Emergency	Dependent on imaging
Sphincter failure	Emergency	Emergency	Dependent on imaging, complete/incomplete, duration of symptoms

Key - neurological deficit

Stable = No change over previous 7 days

Deteriorating = significant alteration of motor power (loss of one or more MRC motor grade) or sphincter function

Minor = Sensory only or minor motor weakness but still able to tiptoe, heel walk and knee-dip. Mobile without aids

Major = Loss of single leg antigravity Tiptoe (TT,) Heel Walk (HW), SLD (single leg knee dip). Needs walking aids or is unable to mobilise (due to weakness.) Care to be taken with examination if significant risk of instability.

Sphincter Failure - Difficulty in micturition - Insensible incontinence. Painless retention, faecal incontinence, perianal paraesthesia/ sensory loss, alteration of anal tone/ contraction

Urgency of referral

Emergency -(E), = same day, no delay admission

Spinal metastases – 1 week referral to MSCC coordinator (NICE CG75 (2008) MSCC clinical guideline and NICE QSAC(2014) for MSCC)

Urgent (U) Telephone call to on call spinal surgery service and action as advised and either Fax or letter (as locally agreed) denoting urgent (ideally should receive 1/52 appointment and imaging with review within 2 weeks).

Routine (R) - to achieve 18/52

Red Flag Appendix 3 Spinal Red flag conditions – Secondary / Tertiary care action timelines.

*Please recognise this can only be regarded as **a guide**. The responsible **senior medical staff** should always be informed when patients with new or evolving neurological deficit present and again (depending on their instruction) if there is significant deterioration. If there is no imaging evidence of extrinsic neurological compression despite clinical neurological deficit senior staff must be informed and urgent neurological referral should normally be considered.*

	)	Timelines		Comments
Specific Conditions	**Time to imaging MRI**	**Time to treatment plan**	**Time to intervention**	
Osteoporotic Fracture with severe or significant pain at 8 weeks	Urgent	Urgent	Soon/ Urgent dependent on imaging	
Spinal metastases no neurological deficit	Urgent	Urgent	Soon	Discuss with Oncologists
Major motor radiculopathy	Emergency	Emergency I	?Urgent Dependent on duration	See radiculopathy section
MSCC with Neuro Symptoms /signs	Emergency	Emergency	Soon /Urgent Dependent on imaging	See NICE GL 75, QSAC 2014 Discuss with Oncologists
Spinal infection	Emergency	Emergency	Soon/Urgent Dependent on imaging	To obtain cultures whenever possible before Antibiotics
Sphincter failure - incipient or established recent <48 hours	Emergency	Emergency	Emergency	
Sphincter failure Established > 48 hours	Emergency	Emergency	Urgent Dependent on imaging	
Spontaneous epidural haematoma	Emergency	Emergency	Emergency/ Urgent Dependent on neurology	
Ankylosing Spondylitis with new pain	Emergency	Emergency	Emergency/ Urgent Dependent on neurology	Extreme care with positioning

Key - Time to imaging -

Emergency (E) - That day or first in am next day if theatre following day
Urgent (U) - (to allow clinic review within 2/52 if imaging suggests this to be required)
Routine (R) to allow completion of Rx within 18/52

Time to Treatment plan - Emergency - (E) Senior clinician informed immediately and review when imaging available,
Urgent – Post take review or sooner if imaging requires this
Routine - Booked clinic review

Time to intervention (presuming no overriding co morbidities)
Emergency (E)(with level of emergency depending on clinical circumstances and theatre availability (Immediate if required)
Urgent (U) Urgent – that day or if after 2100hrs first on the list next day
Soon (S) next available list
Routine(R) to achieve 18/52

Red Flag Appendix 4 – Interventions

Cauda Equina Syndrome

- Lumbar spinal surgery is usually required for those patients with cauda equina syndrome (usually discogenic).This is performed posteriorly and involves decompression of the nerves and removal of fragments of disc compressing the nerves.

For all other indications / interventions please see Service Specification Complex Spinal Surgery D14. (Extract below)

Key interventions include:

- Image guided biopsy (tumour and infection) - This is often performed by the interventional radiologist under CT guidance but sometimes in theatre by the radiologist or surgeon with image intensifier control
- Neoadjuvant chemotherapy - sometimes some tumours are too large or too close to vital structures to be amenable to surgery initially. It is possible to shrink some of these (typically Ewing's sarcoma and osteosarcoma) with chemotherapy such that become surgically removable

Excision - this may be:

- Extralesional - removal of the tumour with an intact cuff of normal tissue. This is the ideal when attempting a curative resection. Adjuvant local therapy (Beam therapies (Radiotherapy, Intensity modulated radiotherapy (IMRT) or Intensity modulated proton therapy (IMPT)) is probably not necessary.
- Marginal - removal of the tumour with possible but no definite breach of the tumour margin (often possible when attempting to preserve spinal cord function but removing the tumour up to the dural sleeve) Adjuvant local therapy should be considered.
- Intralesional - the tumour has been breached in the course of surgery with a much higher probability of local recurrence. Adjuvant local therapy probably advisable if the tumour is likely to be sensitive.

For Spinal Reconstruction the tumour itself or the amount of tissue it is necessary to remove for tumour clearance may render the spine unstable and painful. There are different routes and techniques to stabilise the spine. These may be used in varying combinations. These include:

- Vertebroplasty – Image guided injection of cement from the back of the spine into the vertebral body to provide internal reinforcement. This may be preceded by balloon correction of deformity (kyphoplasty)
- Pedicle screw stabilisation - Screws are inserted from the back of the spine into the anterior column (vertebral bodies) and connected by rods to provide posterior scaffolding support
- Anterior spinal reconstruction - the destroyed or weakened vertebral body is removed and replaced with cement or purpose designed cages of differing materials depending on the subsequent treatment likely to be required
- Spinal Fusion - all spinal stabilisation techniques are liable to failure unless accompanied by bony healing which is achieved using bone grafts or substitutes to get the bones to join together over the involved levels

Red Flag Appendix 5 Outcome Measures

Contents

Standard	Description	Data Specification (if required)
Missed red flags or progressive neurological deficit including Cauda Equina Syndrome		Secondary care providers should report annually the number of cases / nature of missed red flag or progressive neurological deficit including Cauda Equina Syndrome including the pathology missed and the effect of delay.
Establish appropriate pathway for red flags agreed between primary and secondary care to include a regional plan to manage spinal emergencies and red flags in a timely manner.	Imaging investigations should be requested and a regular MDT set up to discuss cases for referral. This should have strong links with the spinal surgery network and should be led by a Spinal Surgeon. Delay can result in chronicity, a worse response to surgery and prolonged time off work.	The service should report: 1. Number of patients seen 2. Number of MRI scans performed 3. Number of patients referred to spinal MDT 4. Number of patients referred to spinal surgeon 5. Number undergoing surgery
Established secondary care spinal MDT meeting Spinal Task Force standards.	Include all personnel involved in the provision of spinal services in a Trust.	Number of MDT meetings held Number of patients discussed Meeting minutes taken
Availability of MRI and CT imaging	Emergency Department must have access to daytime MRI and 24/7 CT access. Image Exchange Portal (IEP) must be available. Spinal centres designated to provide emergency spinal services in the network must have 24/7 MRI and CT.	Each CCG should be able to define their pathway of emergency spinal care.
Access to spinal surgeons	Spinal surgeons able to perform the required surgery should be part of the regional spinal network as all cases for surgery (except injections) should be discussed within the setting of a spinal MDT.	All patients having surgical interventions including injections should have Patient Reported Outcome Measures (PROMS) before surgery and at 1 and 2 years after surgery (6 months after injections). These should include either: • COMI (Core Outcome Measures Index) or • VAS back, Oswestry Disability Index and EQ-5D. This data along with the surgical procedure and any complications : ○ Surgical rate by indication and reasons for

		non-intervention ○ Mortality - operative and 30 day ○ Rate of post –operative neurological deterioration ○ Rate of avoidable complications (Wound infection . Failure of construct or fusion) ○ Rate of re-operation should be recorded in one of the spinal databases (*British Spine Registry or Spine Tango – See Appendix 5*). Analysis of this data will form part of revalidation for the surgeon.
Training and governance of community providers and other AQP	Community and AQP may provide: 1. Low intensity CPPP 2. Non-specialised spinal surgery 3. Pain management services	Staff training, revalidation, indemnity, quality of service delivery and collection and reporting of outcome measures must be the same for all providers
Success of spinal surgery	Spinal surgery for Red flag indications	All patients having surgical interventions should have PROMS before surgery and at 1 and 2 years after surgery. These should include either: • COMI (Core Outcome Measures Index) or • VAS back, Oswestry Disability Index and EQ-5D. • And a record of urinary and anal sphincter function This data along with the surgical procedure and any complications (see Appendix 4) should be recorded in one of the spinal databases (British Spine Registry or Spine Tango).
British Association of Spine Surgeons audit of suspected Cauda Equina Syndrome (CES)		All hospitals treating CES should complete the audit and submit data for central reporting. The data can be added directly into the British Spine Registry.

NHS England: Trauma Programme of Care
National Pathway of Care for Low Back and Radicular Pain

2017 Update at a Glance: Summary and Incorporation of NICE 2016

Contents

With thanks for the contributions from the representatives of 31 Stakeholder organisations

Change of Chair

Prof Charles Greenough has now retired. Mr Ashley Cole has now taken up the role of chair.

Implementation Guide

A new section has been added, outlining the outputs from the NHS England Improving Spinal Care Project:

- Implementation of the National Back Pain Pathway though commissioning
- Roll out of Regional Spinal Networks
- Evaluation of the North East Back Pain Pathway Implementation by the NEQOS
- Development of a database providing transactional and patient outcome data.

Change of Terminology

- Triage & Treat changed to Specialist Triage
- CPPP changed to Comprehensive Multidisciplinary CPPP

New Box: Medial Branch Block +/- Radiofrequency Denervation

An approved intervention later in the pathway for people with mod-severe chronic back pain with clinical features suggestive of a facet joint component, who have had insufficient improvement with comprehensive conservative management.
Guidance is provided on the entry/exclusion criteria, referral information, clinical skills and competencies, and outcome measures.

Rewrite: Comprehensive Multi-Disciplinary Combined Physical and Psychological Programme

The overview of CPPP has been rewritten to reflect the NICE NG59 discussion and to differentiate between the comprehensive multi-disciplinary CPPP & the low-intensity CPPP (delivered in the core therapy box). The entry criteria, content of programmes and clinician skills/competencies have also been updated.

Promoting Best Value for Managing Back Pain & Radicular Pain

- Defining appropriate and timely access throughout the pathway.
- Defining the skills and competencies of clinicians at different stages of the pathway.
- Promoting the commissioning of treatment recommended by NICE (NG59) 2016
- Backing de-commissioning of treatments which are recommended against by NICE (NG59) 2016

The Future of the National Low Back Pain & Radicular Pain Pathway

Implementation will continue as a national programme overseen by NHS England TPoC and the Spinal Services CRG. The Chair of the pathway and the accountable commissioner, will work with the STP's to ensure that CCG's can see the benefits. Work is underway to implement effective monitoring of the pathway to determine its value.

Develop National Back Pain Pathway Clinical Networks: NBP-Clinical Network

NBP-Clinical Network:
The UKSSB have supported the introduction of a new national clinical network for key players (clinicians and commissioners) who have responsibility for the implementation & development of their local back pain pathway.

- **Travel fellowships**
- **Annual meeting (to include implementation and outcomes)**
- **Links to the Regional Spinal Networks**
- **Representation to the UKSSB**

If you would like to join this network please send your contact details to **elaine.buchanan@ouh.nhs.uk**.

Incorporation of the NICE NG59 recommendations

The NBPP stakeholders agreed to adopt all of the NG59 recommendations:

NICE	Back pain +/- Sciatica:	Box in Pathway
1	Consider using risk Stratification from STarT Back Tool	2/3
2	Based on risk stratification: a) less intensive support if low risk b) more intensive support if high risk	4/10/12
4	Explain to patients imaging may not be needed in specialist setting	2/3
5	Consider imaging in specialist setting if it is likely to change management	8/9/11/13
6	Consider alternative diagnoses: new/changed symptoms/exclude specific causes	2/3/6/7/9
7	Provide advice & information to help self-management & encourage normal activities	All
8	Consider group exercise	10
13	Manual therapy as part of a treatment package including exercise +/- psychological therapy	10
19	Consider CBT psychological therapies as part of a treatment package including exercises	10
30	Consider a Combined Physical and Psychological Programme (CPPP)	12
31	Promote and facilitate return to work and normal activities of daily living	2/3/9
21-23	Consider oral NSAIDs: with assessment, monitoring & gastro-protection, lowest effective dose & shortest time	1/2/3
24	Consider weak opioids +/- paracetamol (acute LBP only if NSAID not possible or ineffective)	2/3
33	Consider radiofrequency denervation if non-surgical treatments ineffective in chronic LBP	13
34	Consider radiofrequency denervation only if positive medial branch block	17
	Sciatica:	
20	For recommendations on neuropathic pharmacology see CG 173	2
36	Epidural injections of local anaesthetic and steroid for acute and severe sciatica	22
38	Refer for surgical opinion regardless of: BMI, smoking status, psychological distress	8
41	Consider spinal decompression if non-surgical treatment has not improved pain or function	21
	Back pain +/- Sciatica: Do not offer	
3	Routine imaging in a non-specialist setting	2/3
9-11	Belts, corsets, foot orthotics, rocker sole shoes	10/18
12	Traction	10/18
14	Acupuncture	10/18
15	Ultrasound	10/18
16-17	PENS or TENS	10/18
18	Interferential therapy	10/18
	Back Pain: Do not offer	
25	Paracetamol alone	2/3
26	Routine opioids for acute LBP	2/3
27	Opioids for chronic LBP	2/3
28	Selective serotonin, serotonin-norepinephrine or tricyclic antidepressants	2/3
29	Anticonvulsants	2/3
32	Spinal Injections	16
35	Imaging as a prerequisite for radiofrequency denervation	13/17
39	Disc replacement	15
40	Spinal fusion (**unless part of a RCT**)	15
	Neurogenic Claudication:	
37	Do not use epidural injections for neurogenic claudication with central spinal stenosis	22/16

Mr Ashley Cole
National Back Pain Pathway Chair

Elaine Buchanan
National Back Pain Pathway Editor

Original Author – Prof C.G. Greenough

On behalf of the Clinical Group

Date 17 Dec 2014

Change Control

Due for Review by 31 March 2019 or sooner if new research justifies

30 June 2017 (Third Edition Ver 1.0)

Clinical Lead: Mr Ashley Cole, Spinal Services CRG Chair (ashley.cole4@nhs.net)
Editor: Elaine Buchanan, Consultant Physiotherapist

New section: implementation guide
Changes made to incorporate evidence from the NICE guidance published 30 Nov 2016
New Box 17: Medial Branch Block/Radiofrequency Denervation
Change of terminology:

- Triage & Treat - Specialist Triage
- CPPP - Comprehensive Multidisciplinary CPPP

Major revision:

- Box 1: Overview & Pharmacology
- Box 10: Interventions
- Box 12: Overview & Entry Criteria
- Box 13: Shared Decision Making/Patient Choice
- Box 14: Entry Criteria
- Box 15: Interventions & Measurement Point
- Box 16: Rewrite of all content
- Box 18: Interventions
- Box 19: Entry Criteria
- Box 22: Timelines & Exclusions

Minor revisions: Boxes 2, 3, 4, 6, 7, 8, 11
20 Dec 2016 (Ver 1.6)
Improved graphic quality of Fig.8 and Fig. 7
Added additional heading to the Table of Contents

20 Dec 2016 Ver 1.5
Implementation Guide Added

20 Nov 2015 (Ver 1.4)
Missing line/connection from Box 13 to 5

11 Nov 2015 (Ver 1.3)
Backpain flowchart Box 9 in line with others
Backpain flowchart Box 12 & 13 now at the same point
Backpain flowchart removed & adjusted several lines
Radicular flowchart re-coloured Box 23 to have blue and green colours

23 Sept 2015 (Ver 1.2)
Removed line from box 2 to box 10
Changed weight of line from box 3 to 10
Changed definition of heading Shared Decision Making / Patient Choice in box 3

04 Feb 2014 (Ver 1.1)
Colour coding for pathways.
New hyperlinks from Pathway to text.
Access to data tools, Royal College of Surgeons of England