

## Management of low back pain

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Back pain is the leading cause of occupational disability in the world and the most common cause of missed workdays. As the population ages and our lives become more sedentary, this situation is unlikely to change. We aim here to provide an evidence based overview of low back pain aimed at primary care physicians.

### Scope of problem

The most frequently quoted epidemiological studies cite lifetime adult prevalence rates varying from 50% to 80%, and point prevalence rates from 15% to 30%.<sup>1</sup> Yet even these statistics may underestimate the problem. A recent prospective study of 154 reserve soldiers with no prior history of back pain found that 64% of this low risk group developed at least moderate back pain over an 18 month period when queried monthly.<sup>w1</sup> This suggests that reported prevalence rates may be a function of the type and frequency of surveillance.

### What features on history and examination can help identify the cause?

#### History

Box 1 lists the causes of low back pain. The origin of pain can be broadly classified as mechanical, neuropathic, or secondary to another cause. Mechanical back pain implies that the source of pain is in the spine or its supporting structures. Neuropathic back pain denotes the presence of symptoms that stem from irritation of a nerve root(s).

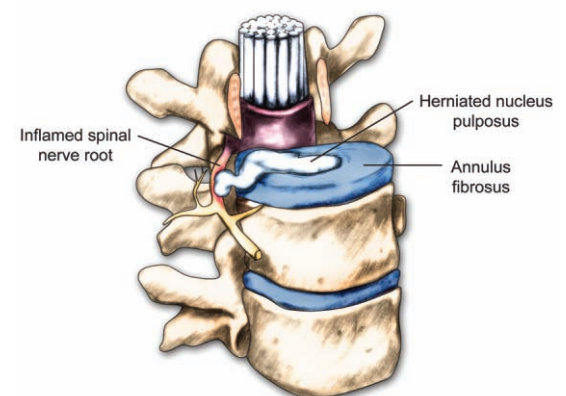
There are several ways to distinguish mechanical from neuropathic low back pain in history taking. Patients are more likely to describe radicular pain as “shooting” and “stabbing” and musculoskeletal pain as “throbbing” or “aching.” Whereas mechanical pain often radiates into the upper thigh and buttocks, extension below the knee is less common than with radicular pain. Several instruments can facilitate distinguishing neuropathic from nociceptive pain, including some that focus on low back pain.<sup>3,w2</sup> One such instrument found that 37% of patients with chronic low back pain had predominantly neuropathic symptoms.<sup>3</sup> The rationale for distinguishing between neuropathic and non-neuropathic back pain is that mechanistically based pain treatments may be more effective than aetiologically based treatments.<sup>w3</sup> The

lack of a standard marker, however, limits the validity and estimates of these categorisation tools.

Mechanical causes of back pain, including muscle strains, are typically worsened with movement and improved by rest. In patients with disc disorders, prolonged sitting or forward flexion may aggravate symptoms. Pain associated with spinal stenosis is classically relieved by forward flexion, and worsened with extension. These patients can often walk up hills or ride a bicycle with minimal difficulty. Sensory changes such as tingling and numbness may indicate lumbosacral radiculopathy.

Although episodes of serious low back pain are as likely to begin during activities of daily living as after minor trauma, a precipitating event can occasionally help pinpoint a pain source. Among the various aetiologies of mechanical low back pain, sacroiliac joint pain is most often associated with a traumatic event such as a fall or motor vehicle collision (40-50%).<sup>4</sup> In patients presenting with a neuropathic pain, a herniated disc is more likely than spinal stenosis to be associated with an abrupt onset and specific inciting event.<sup>w4</sup> Figures 1-3 illustrate some of the more common disorders.

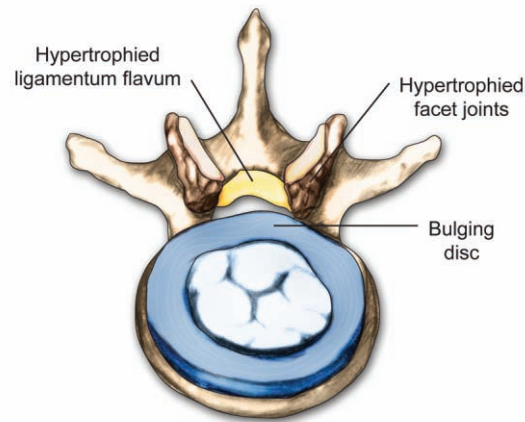
Ascertaining chronicity of symptoms and distinguishing between different causes through clues provided by a thorough history can help determine which patients should be referred for further evaluation and may



**Fig 1** | Herniated nucleus pulposus causing nerve root impingement. Radicular symptoms may result from either chemical mediators released from degenerated discs or mechanical irritation

### SOURCES AND SELECTION CRITERIA

We obtained the publications reviewed for this article via searches in Medline, Embase, and Ovid, as well as the Cochrane Library. We used keywords “low back pain” crossed with various search categories (such as “epidemiology”, “surgery”) for each subsection. We gave special attention to systematic reviews, meta-analyses, and randomised trials



**Fig 2 | Axial view of a vertebral body showing central spinal stenosis. Other causes of spinal stenosis include foraminal narrowing, osteophyte formation, spondylolisthesis, post-surgical changes, and congenitally short pedicles**

facilitate prognosis. Patients can have acute (less than four weeks' duration) non-specific pain, chronic (persisting for more than three months) low back pain without radiculopathy, radicular back pain, or back pain associated with a serious underlying disorder.

#### Physical examination

A physical examination is generally used to direct further investigation, but is rarely diagnostic for a specific aetiology. Major developmental or traumatic deformities should be noted. Sensory loss, clear neurological weakness (as opposed to pain related motion avoidance), and diminished or asymmetrical knee and ankle reflexes may indicate nerve root involvement. Table 1 outlines "red flag" signs and symptoms, which may indicate serious underlying disorders. In patients with serious or progressive neurological findings, a rectal examination is needed to evaluate possible cauda equina syndrome or conus medullaris dysfunction (table 1, box 2; figs 4-6).

#### A PATIENT'S PERSPECTIVE

I am a 68 year old woman who has had low back pain for 13 years. One afternoon, while standing at a sink, I felt a knife-like pain in my lower back. I live in Manhattan so I walk everywhere. But the most difficult thing was driving 66 miles to my teaching job.

After three weeks the pain disappeared. However, a few years later I woke one morning with a horrific pain in my back and legs. Having just retired, I felt as if life had played a cruel trick on me. When friends called, I sometimes cried.

I tried many medications, but none were effective. An epidural steroid injection helped somewhat but lasted only a month. After discography showed several painful discs, I visited a surgeon. But my pain was resolving by then, and I knew too many people who didn't get better with surgery to choose that path.

Today I live with pain and numbness every day. I take an anticonvulsant to help control the sciatica, though it doesn't always help. Yet I exercise regularly and have visited 10 countries in five years. Despite feeling well now, I suspect my pain problems will only get worse.

Audrey Eisen, *New York City*

In a systematic review, the straight leg raising test was found to be the most sensitive sign for radiculopathy, but it was limited by low specificity (pooled sensitivity 0.85, specificity 0.52).<sup>5</sup> Similar analyses conducted for range of motion have generally found them to be limited by low to moderate inter-examiner reliability and a poor relation with functional impairment.<sup>6</sup>

Spinal palpation is often used to evaluate low back pain. Compared with motion assessment, palpation has been found in systematic reviews to have better reliability,<sup>7</sup> but neither test has proved benefit in directing clinical care or establishing a diagnosis. For suspected sacroiliac joint pain and facet arthropathy,

#### Box 1 Common causes of low back pain\*

##### Mechanical (80-90%)

- Unknown cause—usually attributed to muscle strain or ligamentous injury (65%-70%)
- Degenerative disc or joint disease
- Vertebral fracture
- Congenital deformity (such as scoliosis, kyphosis, transitional vertebrae)
- Spondylolysis
- Instability

##### Neurogenic (5-15%)

- Herniated disc
- Spinal stenosis
- Osteophytic nerve root compression
- Annular fissure with chemical irritation of nerve root
- Failed back surgery syndrome (such as arachnoiditis, epidural adhesions, recurrent herniation); may cause mechanical back pain as well
- Infection (such as herpes zoster)

##### Non-mechanical spinal conditions (1-2%)

- Neoplastic (such as primary or metastatic) disease
- Infection (such as osteomyelitis, discitis, abscess)
- Inflammatory arthritis (such as rheumatoid arthritis and spondyloarthropathies, including ankylosing spondylitis, reactive arthritis, enteropathic arthritis)
- Paget's disease
- Other (such as Scheuermann's disease, Bastrup's disease)

##### Referred visceral pain (1-2%)

- Gastrointestinal disease (such as inflammatory bowel disease, pancreatitis, diverticulitis)
- Renal disease (such as nephrolithiasis, pyelonephritis)
- Abdominal aortic aneurysm

##### Other (2-4%)

- Fibromyalgia
- Somatoform disorder (such as somatisation disorder, pain disorder)
- Malingering

\*Modified from Deyo et al<sup>2</sup>

**Box 2 Signs of nerve root irritation**

- Leg pain greater than back pain
- Radiation into foot or lower leg
- Numbness and paraesthesias in dermatomal distribution
- Diminished leg reflexes
- Positive straight leg raising test (L4-S1 nerve roots)
- Positive femoral stretch test (L2-L4 nerve roots)
- Leg pain exacerbated by coughing, sneezing, or Valsalva manoeuvre

no history or physical examination sign is reliably predictive of response to diagnostic injections.<sup>4,8,9</sup>

**Imaging**

The utility of diagnostic imaging for back pain in the absence of major structural abnormalities (such as tumour or infection) is limited by the high prevalence of degenerative disorders in asymptomatic adults. About 30% of adults without low back pain have evidence of a protruded disc on magnetic resonance imaging, over half have bulging or degenerative discs, and a fifth have annular fissures.<sup>10</sup>

Several studies have sought to determine whether early imaging affects outcomes in acute low back pain. For plain radiographs, studies have failed to show a benefit for early imaging, although patients who have radiography may have higher satisfaction rates.<sup>w7</sup> Prospective studies evaluating early magnetic resonance imaging and other imaging methods in patients with low back pain (regardless of whether they have radicular symptoms) have also failed to show benefit.<sup>w8</sup>

The failure to show an advantage with imaging is reflected in recent reviews. Guidelines by the American College of Physicians recommend imaging for low back pain only when severe or progressive neurological deficits are present, when a serious underlying condition is suspected, or when evaluating patients for surgery or epidural steroid injections. When evaluating disc disorders or neurological symptoms or ruling out vertebral fractures or metastases, magnetic resonance imaging without contrast is the most sensitive method.<sup>11</sup>

**Who develops chronic pain?**

Among patients evaluated for low back pain in a primary care setting, 80-90% will no longer seek care after three months. However, recent longitudinal studies suggest that 30-40% may continue to experience persistent symptoms.<sup>12</sup>

Numerous prospective studies have tried to identify predictors of episodes of acute low back pain, and the transition from acute to chronic pain and disability. In

**Table 1 | What not to miss: "red flag" features suggesting serious underlying disorder or nerve root disease\***

Red flag feature	Possible underlying condition(s)	Individuals at increased risk	Associated signs and symptoms
Age >50 years	Metastases, vertebral fractures, herpes zoster, and life threatening conditions such as aortic rupture or perforated bowel	Malignancy: family or previous cancer history, smoking history. Zoster: the risk of acute infection and postherpetic neuralgia exponentially increases with age. Vertebral fracture: history of fall or other trauma. Abdominal pathology (aortic aneurysm): history of smoking, hypertension, vasculitis, abdominal trauma, family history; prior surgery (ruptured bowel)	Malignancy: unexplained weight loss, unremitting pain not relieved by recumbency. Zoster: history of rash. Abdominal pathology: concomitant abdominal discomfort, peritoneal signs, nausea and vomiting
Age <20	May suggest congenital anomalies (such as spina bifida), early onset disorders (such as Scheuermann's disease), or conditions associated with substance misuse (osteomyelitis)	Congenital disorders: neurological symptoms, family history, other congenital abnormalities, systemic disease (such as diabetes or epilepsy for spina bifida). Substance misuse: males, depression or other psychiatric condition, poor school or work performance	Congenital anomalies: birthmarks, overlying skin tags, patches of hair
Trauma	Vertebral fractures, sacroiliac joint pain	Risk factors for vertebral factors: old age, gait abnormalities, osteoporosis, female sex, previous fractures, corticosteroid use, Asian and white ethnic race	Fractures, ecchymoses, peritoneal signs
Systemic illness	Vertebral fractures, spinal infections, and metastases	Risk factors for spinal infections: recent infections, intravenous drug misuse, immunosuppression, recent spinal procedures, diabetes, older age	Spinal infections: malaise, fever, chills, tenderness, leukocytosis, local signs of infection, raised erythrocyte sedimentation rate.
Constitutional symptoms	Metastases and spinal infections	Spinal metastases: patient with breast, lung, prostate, and thyroid cancer	See above (spinal infections). Signs of discitis may be subtle; signs of meningitis may be fulminant and include meningeal signs
Immunosuppression or steroid use	May predispose patients to infectious process, malignancy, or vertebral fractures	Patients with prolonged use of corticosteroids or immunosuppressive drugs (such as transplant recipients, autoimmune disease). Most common locations for vertebral fractures are mid-thoracic, thoracolumbar junction and lower lumbar regions	Vertebral fracture: focal tenderness, sudden onset, pain worsened by any movement and relieved by lying on back, height loss, and deformity
Widespread neurological symptoms	Cauda equina syndrome, myelopathy, multiple sclerosis	Patients with large disc herniation(s), recent (<48 hours) spinal procedures, traumatic injury, malignant and benign spinal tumours, spinal stenosis, and inflammatory conditions (such as ankylosing spondylitis or Paget's disease)	Marked motor and sensory deficits involving multiple nerve roots, gait disturbances, overflow incontinence, saddle anaesthesia, and diminished reflexes and sphincter tone
Unrelenting pain <sup>w6</sup>	Psychogenic pain or somatoform disorder, malingering, malignancy, life threatening abdominal pathology	Psychogenic pain: history of depression, anxiety, psychosocial stressors, multiple somatic complaints, drug and/or alcohol problems	Psychogenic pain: signs of non-organic disorder (Waddell's signs), changes in appetite or sleep habits, difficulty concentrating and irritability, irrational fears, panic attacks

\*Modified from Bigos et al. <sup>w5</sup>

**Box 3 Factors associated with development and persistence of low back pain**

- Prior episode of back pain\*†
- Poor job satisfaction or low pay\*†
- Inadequate coping skills†
- Fear avoidance behaviour\*†‡
- Manual labour or physically stressful job\*†
- Obesity\*†
- Somatisation\*†
- Smoking\*†
- Low baseline activity levels\*†
- Ongoing litigation†
- Older age\*†
- Low educational level†
- Higher pain intensity or disability†
- Neurological symptoms†
- Anxiety\*†
- Depressed mood†
- Emotional distress\*†

The box is Modified from Rubinstein et al.<sup>9</sup> Association does not imply causality. Evidence is mixed for some factors, including smoking, obesity, and low educational level.

\*Associated with development of low back pain in some studies.

†Associated with persistence of low back pain in some studies.

‡The avoidance of physical activities that stems from a patients' fears that their pain will worsen.

general, some psychological factors (such as coexisting depression and anxiety; coping mechanisms and attitudes; work related stress and job satisfaction; and perceived health and activity levels) play a greater role than anatomical pathology in predicting future or persistent low back pain.<sup>13</sup> Evidence for the role of concomitant psychopathology is greater for predicting chronic pain and disability in patients with acute symptoms than it is for predicting new episodes of low back pain.<sup>w9</sup> Box 3 lists factors associated with the development and persistence of back pain.

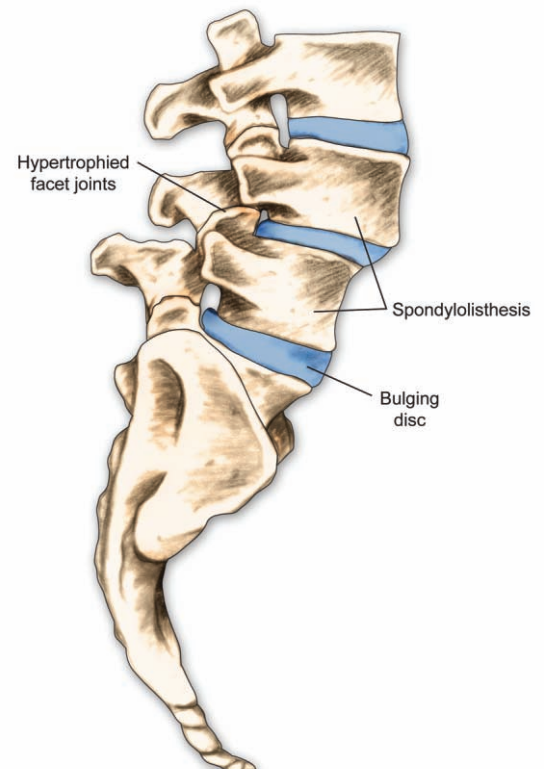
**Treatment**

Most people with low back pain do not seek medical care. Many self treat with over the counter medications and lifestyle changes.<sup>w10</sup> Most cases of acute, non-specific low back pain resolve within two weeks.

Reassurance and counselling patients to stay active are cornerstones of treating such pain, though some may benefit from short term pharmacotherapy. A Cochrane review found that advice to stay active had a small but consistently beneficial effect for pain reduction and functional improvement compared with bed rest in patients with acute, non-specific back pain.<sup>14</sup> For sciatica, the same authors found high quality evidence that bed rest has little or no effect on functional status or pain.<sup>14</sup> In patients with persistent pain with or without radiculopathy, a multimodal treatment regimen that includes a regular exercise programme, weight loss, and if indicated, psychotherapy, injections, and medications can be beneficial.<sup>11</sup> When the pain is the result of a serious systemic cause (such as cancer), symptom palliation should be started concurrently with primary treatment.

**Pharmacotherapy**

Several systematic reviews have concluded that strong evidence supports the use of non-steroidal anti-inflammatory drugs for non-neuropathic low back pain, though the treatment effect is small and the evidence is greater for acute than chronic pain. Paracetamol (acetaminophen) is slightly less effective than non-steroidal anti-inflammatory drugs but has fewer or less severe side effects. Minimal evidence exists that non-steroidal anti-inflammatory drugs are effective for radiculopathy, or that one drug is better than others.<sup>11</sup>



**Fig 3 |** Sagittal view of a lumbar spine showing central and foraminal spinal stenosis at L4-5 and L5-1

**TIPS FOR NON-SPECIALISTS**

- For acute, non-specific back pain, reassure patients and advise them to remain active and continue working
- Reserve radiological studies for patients in whom symptoms worsen or persist, those with neurological symptoms who may benefit from interventions, or to rule out serious disease
- Screen patients with persistent pain for treatable psychosocial factors
- Alternative therapies may provide some relief to patients, but little evidence exists to support one therapy over another
- Injection therapy should be reserved for patients with radicular symptoms (epidural steroids) or chronic pain and injection confirmed disease (such as radiofrequency denervation for facet or sacroiliac joint pain)





**Fig 4 | “Red flag” features suggesting serious causes of back pain.** Left: Infection showing L4-5 pyogenic discitis with epidural abscess. Right: Infection showing T12-L1 spinal tuberculosis with bony destruction and abscess

In patients with acute non-specific back pain, strong evidence exists to support a small effect size for non-benzodiazepine muscle relaxants (such as cyclobenzaprine and tizanidine), and weaker evidence exists to support benzodiazepines (such as diazepam and clonazepam).<sup>15</sup> Given the side effect profile of benzodiazepines and their potential for addiction, many experts believe benzodiazepines should be prescribed only when other muscle relaxants have proved ineffective, and with clearly defined goals and time frames.<sup>w11</sup> For chronic low back pain the evidence supporting muscle relaxants is less convincing.<sup>15</sup>

Most<sup>11 w11-w14</sup> but not all<sup>w15</sup> systematic reviews have found that tricyclic antidepressants, but not selective serotonin reuptake inhibitors, are more effective than

placebo for chronic, non-specific low back pain. For neuropathic pain, the number needed to treat for one patient to obtain significant relief with selective serotonin reuptake inhibitors is more than three times higher than the number for tricyclic antidepressants; the efficacy for serotonin and noradrenaline (norepinephrine) reuptake inhibitors falls between that for these two drug classes.<sup>w16</sup>

Scant evidence exists to support any drug class for radiculopathy, but two studies have shown a small benefit for gabapentin.<sup>w17 w18</sup> Opioids are generally regarded as a reasonable option for some episodes of acute back pain, but the evidence for use in chronic low back pain is unclear. In a meta-analysis the authors concluded that, although opioids can provide short term relief in some patients with chronic low back pain, their long term benefits remain unproved.<sup>16</sup> If opioids are used for chronic low back pain or other non-malignant conditions, many guidelines advocate their use only when more conservative treatments have failed, in conjunction with risk assessment tools and an opioid contract, and with clearly defined goals and exit strategies.<sup>w19</sup>

**Alternative therapies**

Physicians are increasingly referring patients for complementary and alternative medical treatments, with some studies showing that more than half of primary care doctors routinely recommend or prescribe them for backache.<sup>17 w10</sup> In practice guidelines published jointly by the American College of Physicians and the American Pain Society, fair to good evidence is cited supporting numerous alternative treatments for chronic and subacute (more than four weeks) low back pain, including acupuncture, yoga, massage, spinal manipulation, and functional restoration.<sup>17</sup> For acute, non-specific back pain, evidence of efficacy was found only for spinal manipulation and superficial heat. Evidence was insufficient to fully evaluate any therapy for radiculopathy or to support one effective treatment over another. Table 2



**Fig 5 | “Red flag” feature suggesting serious causes of back pain.** L1 spinal metastatic disease with erosion of posterior cortex into spinal canal

**Table 2 | Alternative and complementary medicine treatments for back pain<sup>17 18 19 20</sup>**

Treatment	Description	Evidence
Spinal manipulation	Manual therapy designed to maximise painless movement, reduce muscle tightness, improve joint mobility, and correct alignment problems	Superior to sham therapy for patients with acute and chronic (axial and radicular) low back pain. It is no more effective than conventional or other alternative treatments
Acupuncture	Inserting needles into the skin at various anatomical locations to reduce pain or induce anaesthesia. Needles may be manipulated manually or through electrical stimulation	The benefits of acupuncture for acute low back pain are unclear. For chronic pain, acupuncture is more effective in the short term for pain relief and functional improvement compared with no treatment or sham treatment. It is no more effective than conventional or other alternative treatments
Massage therapy	The manipulation of muscle and connective tissue to enhance function and promote relaxation and wellbeing	May provide short term relief for subacute and chronic non-specific low back pain
Exercise therapy	Active or passive physical exercises designed to strengthen or stabilise the spine, which may reduce pain, prevent injuries, and improve posture and body mechanics	Stronger evidence for chronic than acute non-specific low back pain. May facilitate return to work, but no evidence for prevention of work injuries. No clear evidence supporting one technique over another
Other therapies	Includes interferential therapy, low level laser therapy, shortwave diathermy, electrical muscle stimulation, transcutaneous electrical nerve stimulation (TENS), yoga, ultrasonography, heat/cold, and traction.	Weak evidence to support TENS for short term pain relief. No evidence to support the use of traction. For other modalities, there is insufficient evidence to support their use for acute or chronic low back pain



**Fig 6** | “Red flag” feature suggesting serious causes of back pain. L2 vertebral fracture

summarises evidence for possible alternative therapies for low back pain.

### Nerve blocks

In patients whose symptoms persist after six weeks, nerve blocks may offer diagnostic and therapeutic benefits. For lumbar epidural steroid injections, systematic reviews found moderate evidence that fluoroscopically guided procedures can provide short term relief for radicular pain secondary to a herniated disc, and mixed evidence for long term (six months or longer) benefit.<sup>21 w20</sup> The evidence is stronger for transforaminal injections than for caudal or interlaminar epidurals and stronger for subacute than chronic pain.<sup>21 w20</sup> In a small, randomised, placebo controlled study, transforaminal epidural steroids reduced the rate of later surgical intervention.<sup>22</sup> In patients with spinal stenosis, there is weak evidence for short term benefit; in non-specific low back pain, no convincing evidence exists to support epidural injections.<sup>21</sup>

Interventional treatments for axial low back pain are less effective than for radiculopathy. In patients with suspected facet joint pain, there is very little evidence to support corticosteroid injections and weak evidence for radiofrequency denervation.<sup>9</sup> For injection confirmed sacroiliac joint pain, there is weak evidence for short term relief with intra-articular steroid injections and weak evidence for radiofrequency denervation.<sup>4</sup> The evidence for intradiscal electrothermal therapy for discogenic pain is conflicting.<sup>w21</sup>

### Surgery

Surgical interventions for low back pain secondary to major pathologies such as infections, tumours, and fractures are often effective in protecting neurological structures, preventing deformity, and relieving pain. In patients with persistent radiculopathy resulting from common degenerative conditions, surgery can reduce pain and improve function. For disc herniations without severe neurological deficits, the main benefit of surgery may be a more rapid return of function

## ADDITIONAL EDUCATIONAL RESOURCES

### Resources for patients

- Back Care ([www.backpain.org](http://www.backpain.org))—European charity providing evidence based information for patients, a telephone hotline, tips for preventing and managing back pain, and research funding
- Spine-health ([www.spine-health.com](http://www.spine-health.com))—US website with message boards, interactive videos, lists of physicians in the US, physician written literature, and ongoing clinical trials
- WebMD ([www.webmd.com/back-pain](http://www.webmd.com/back-pain))—A major health portal in the US, it provides a symptom checklist, pharmacy information, and blogs of physicians and healthcare journalists

### Resources for healthcare professionals

- European Commission Research Directorate General ([www.backpaineurope.org](http://www.backpaineurope.org))—European evidence based guidelines on preventing and managing acute and chronic low back pain
- Cochrane Back Review Group ([www.cochrane.iwh.on.ca](http://www.cochrane.iwh.on.ca))—International organisation that publishes evidence based reviews on preventing and treating spinal pain
- Medline Plus: Back Pain ([www.nlm.nih.gov/medlineplus/backpain.html](http://www.nlm.nih.gov/medlineplus/backpain.html))—Provides comprehensive reviews on preventing and treating back pain, plus resources including databases, directories, drug information, and organisations providing health information

compared with the natural course. Compared with non-operative therapy, surgical intervention for spinal stenosis and spondylolisthesis results in superior outcomes, which persist for at least two years after surgery.<sup>23</sup>

In patients with chronic low back pain who present with common degenerative changes seen on imaging, surgical interventions (fusion or disc arthroplasty) are less effective. Whether surgery in this group gives much better results than a comprehensive rehabilitation programme with cognitive behavioural therapy is not clear. Only 15-40% of patients can expect a highly functional outcome after surgery in this context.<sup>w22</sup>

### Promising areas of investigation

Regenerative treatment strategies designed to reverse or inhibit disc degeneration include the administration of growth factors, autologous or allogenic cells, gene therapy, and the introduction of biomaterials. Studies that aim to refine selection criteria and techniques for interventional procedures are also being conducted. However, the use of genetic testing to select patients for treatment is limited by the complex relation between outcomes and psychosocial factors.

Preclinical and clinical studies have generated a compelling case for cytokines as the major intermediary in some forms of sciatica.<sup>w23</sup> Thus, strategies to alter cytokine activation pathways look promising. Finally, public health initiatives may reduce disability

## ONGOING RESEARCH

- Is there a role for gene therapy in the treatment of radicular and axial back pain? Researchers are exploring the use of viral vectors to carry analgesic genes to specific targets
- Will the perineural injection of cytokine inhibitors after acute disc herniation prevent the persistence of neuropathic pain? Investigators have achieved promising results using transforaminal epidural etanercept for acute radiculopathy
- Is it possible to intervene in high risk individuals to prevent episodes of back pain? Military researchers are conducting trials to evaluate whether combinations of education, counselling, core stabilisation, and neuromuscular training can prevent low back injuries in soldiers at high risk of low back pain
- How effective are alternative medicine treatments for low back pain? The use of alternative and complementary medicine has grown dramatically in the past 10 years, but controlled studies showing efficacy are lacking. In Europe, Asia, and North America, clinical trials are currently evaluating therapies such as yoga, t'ai chi, therapeutic massage, spinal manipulation, and acupuncture in back pain and other conditions

**SUMMARY POINTS**

Most people will at some time experience an episode of serious low back pain, but most cases resolve with minimal intervention

The main value of a history and physical examination is to determine which patients should be referred for imaging and interventions

Early magnetic resonance imaging has not been shown to improve outcomes for low back pain

The risk factors for progression to chronic back pain are predominantly psychosocial and occupational.

Most treatments for chronic low back pain have a small effect and/or afford transient benefits

from low back pain. An Australian study evaluating a television campaign advising people with back pain to stay active and keep working was found to reduce disability claims and medical expenses.<sup>w24</sup>

Figures 1-3 were drawn by and published with permission from Peter Pollack.

SPC is a colonel in the US Army Reserve.

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**Watch out for infection control**

We arrived for our work experience at a busy teaching hospital with “bare below the elbows” ringing in our ears. We adjusted our clothing accordingly—leaving jacket, tie, jewellery, and watch at home and rolling up our sleeves. This would never be allowed in school.

As we entered the hospital, we wondered how health professionals were adapting to such a change in dress code, so we covertly kept track of all professionals we saw on the wards. When we came to look at the data, the results were surprising. Only 39% of doctors complied, compared with 84% of nurses. Further analysis of our observations showed 75% compliance among female doctors but a mere 34% compliance in their male counterparts. In 52% of cases the only failing was in wearing a wristwatch.

“Arrogance,” one can hear government ministers saying. Or is it?

There is a clear disquiet among professionals about a lack of evidence base for banning watches. Furthermore, many view watches as a clinical tool.

However, in January 2008 the directive for “bare below the elbows” was issued by the Department of Health, and hospital trusts are compelled to respond. Perhaps a business venture in a macho, upmarket fob watch will fund our years in medical school.

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