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Non-Specific Low Back Pain: Manage Initially with Reassurance, Activity and Analgesia

Evidence-based management of non-specific low back pain involves reassurance about a favourable prognosis, advice to maintain daily activities and stay active, and the prescribing of simple analgesic medications.

Low back pain is responsible for considerable personal burden, with up to half of those who experience low back pain in any 12-month period seeking primary care.1 Those with the condition suffer pain, impaired daily living, work and social functioning, psychological problems and reduced quality of life. Despite the extent of this burden and the availability of clinical practice guidelines, there exists an 'evidence-practice gap' in which patients often do not receive management aligned with the best quality evidence. This article provides a brief overview of the presentation and evidence-based management of low back pain in primary care.

Although a common problem in general practice, contemporary management of low back pain is variable and often suboptimal, resulting in poorer outcomes for patients and society at large.

About the authors

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Prof Rachelle Buchbinder MB BS(Hons), MSc, PhD, FRACP is Director of the Monash Department of Clinical Epidemiology at Cabrini Hospital, and a Professor in the Department of Epidemiology and Preventive Medicine, School of Public Health and Preventive Medicine at Monash University, Melbourne, Australia. By clearly articulating current understanding of low back pain and best-practice management, this article can serve as a guide to clinicians in their day-to-day care of these patients. Patients whose back pain arises from 'red flag' conditions such as cancer, inflammatory arthritis, infection or fracture are uncommon in primary care. Although screening for these conditions is mentioned, their management is beyond the scope of this article. Likewise, the management of patients with back pain of presumed neurological origin is also not covered in detail.

Diagnosis of low back pain

Clinical guidelines typically recommend triage of patients presenting in primary care with low back pain into three categories:

• 'Serious spinal pathologies', including cancer, infection, spondyloarthritis (eg,

- ankylosing spondylitis), cauda equina syndrome and vertebral fracture
- Radiculopathy due to compression and/or inflammation of the spinal nerve root
- Non-specific low back pain (covering patients not included in either of the above two groups).

Serious spinal pathologies

Patients with 'serious spinal pathologies' make up about 1% of the presentations of low back pain in primary care. Clinical suspicion of these conditions is raised by the presence of clusters of 'red flags', which may include recent unexplained weight loss, fever, saddle anaesthesia and recent trauma to the back (Table 1).2 Immediate imaging is appropriate for patients in whom there is a strong suspicion of serious spinal pathology (Table 2).3 It should be noted that the diagnostic probabilities change with age and the risk of serious causes of low back pain such as cancer, aortic aneurysm and vertebral fracture are increased in older patients.

Radiculopathy

Radiculopathy due to compression and/ or inflammation of the spinal nerve root is recognised by dermatomal sensory loss, myotomal power loss and reduced

Key points

- Low back pain is one of the most common and costly musculoskeletal conditions treated in primary care.
- Patients accessing primary care for low back pain should be screened for serious pathologies such as cancer, fracture and systemic diseases, but these conditions are very rare in such patients.
- Evidence supports the providing of reassurance about a likely good prognosis and advice to stay active, and the prescribing of simple analgesia.
 Most patients recover well when treated in this manner.
- Routine imaging and bed rest are not recommended.





TABLE 1

Alerting features of serious spinal pathologies ('Red flags')2

Features	Condition
 Symptoms and signs of infection (eg, fever) Risk factors for infection (eg, underlying disease process, immunosuppression, penetrating wound, intravenous drug use) 	Infection
 Significant trauma Minor trauma (if age over 50 years, history of osteoporosis and/or taking glucocorticoids) 	Fracture
 History of malignancy Age over 50 years Failure to improve with treatment Unexplained weight loss Pain at multiple sites Pain at rest 	Tumour
 Sudden onset/absence of aggravating features Associated collapse/hypotension Pain not aggravated by spinal movement Abdominal pain radiating to back 	Aortic aneurysm, leak or rupture
 Urinary retention Bilateral neurological symptoms and signs syndrome Saddle anaesthesia The presence of these features requires very urgent referral 	Cauda equine syndrome

Adapted with permission from: Evidence-based Management of Acute Musculoskeletal Pain. Australian Acute Musculoskeletal Pain Guidelines Group; 2003.2

reflexes. Spinal stenosis involves the narrowing of the spinal canal in older patients; these patients present with radiating leg pain and pseudoclaudication. Together radiculopathy and spinal stenosis account for around 5% of presentations. For both conditions, imaging is necessary only if surgery is being considered (Table 2).3

A diagnosis of radiculopathy can typically be made when leg pain is more severe than back pain, there is unilateral pain that radiates below the knee, there is a positive straight-leg raise test and neurological signs (weakness, sensory changes, reduced reflexes) are present in the distribution of a spinal nerve.4

Non-specific low back pain

Non-specific low back pain is the low back pain in patients who do not have serious spinal pathologies or radiculopathy/spinal stenosis; these patients comprise the majority (about 94%) of presentations of low back pain in primary care. The term reflects the fact that current diagnostic techniques are unable to reliably identify the pathoanatomic source or sources of pain in these patients.

Although numerous attempts have been made to divide this group into meaningful subgroups based on assumed pathology, symptom pattern or treatment response, none has demonstrated the necessary validity and reliability to achieve universal acceptance. A review of diagnostic procedures, including physical assessments conducted in the clinic, revealed little utility for valid subdivision of this group.5 The designation 'non-specific' is intended to include all patients whose pain is presumed to be of a musculoskeletal (sometimes called

mechanical) origin. It separates these patients from those with an underlying systemic condition or tumour (the serious spinal pathologies group) and those with pain of a presumed neurological origin (the radiculopathy group).

Routine imaging is generally not necessary in patients with non-specific low back pain of short duration (Table 2).3 Imaging is discussed in more detail later in the article.

Prognosis

The outlook for patients who present for care with a short history of non-specific low back pain is generally good; most of these patients will improve quickly. However, a small proportion (fewer than 5%) develop persisting symptoms that are severe and disabling.6 Of those who do recover early, about one quarter will have a recurrence in the next 12 months.7 People who present with more chronic symptoms are less likely to recover quickly or completely.8

Recent studies have explored the potential of stratifying patients according to their risk of developing long-term symptoms at initial presentation.9 People at low risk of developing persistent disabling low back pain need minimal intervention, but those at greater risk may benefit from targeted intervention tailored to their risk indicators. Prognostic studies have suggested that people with greater pain and disability at presentation and/or indicators of psychological dysfunction (catastrophic thinking, fear, anxiety, depression) are more likely to experience ongoing symptoms.10 Other factors that have also been found to raise the likelihood of poor outcome include older age, poor general health, poor relations with work colleagues, physically demanding work and the availability of compensation.11

Patients with radiculopathy have a generally less favourable prognosis than those with non-specific low back pain.

Managing non-specific low back pain

The initial management of patients with non-specific low back pain involves:

· Provision of reassurance and advice to maintain daily activities and stay active, and





TABLE 2

Acute low back pain: suggested imaging strategy and timing³

Clinical situation	Imaging type	
Immediate imaging		
Major risk factors for cancer (new onset of low pain with history of cancer, multiple risk factors for cancer, or strong clinical suspicion for cancer)	Radiography plus erythrocyte sedimentation rate*	
 Risk factors for spinal infection (new onset of low back pain with fever and history of intravenous drug use or recent infection) 	Magnetic resonance imaging	
 Risk factors for or signs of the cauda equina syndrome (new urine retention, faecal incontinence, or saddle anaesthesia) 		
 Severe neurological deficits (progressive motor weakness or motor deficits at multiple neurological levels) 		
Defer imaging until after a trial of therapy		
Weaker risk factors for cancer (unexplained weight loss or age over 50 years	Radiography with or without erythrocyte	
 Risk factors for or signs of ankylosing spondylitis sedimentation rate (morning stiffness that improves with exercise, alternating buttock pain, awakening because of back pain during the second part of the night, or younger age [20 to 40 years]) 		
 Risk factors for vertebral compression fracture (history of osteoporosis, use of glucocorticoids, significant trauma or older age [over 65 years for women or over 75 years for men]) 		
 Signs and symptoms of radiculopathy (back pain with leg pain in an L4, L5, or S1 nerve root distribution or positive result on straight leg raise or crossed straight leg raise test) in patients who are candidates for surgery or epidural glucocorticoid injection 	Magnetic resonance imaging	
Risk factors for or symptoms of spinal stenosis (radiating leg pain, older age or pseudoclaudication) in patients who are candidates for surgery		
No imaging		
No criteria for immediate imaging and back pain improved or resolved after a one-month trial of therapy	_	
• Previous spinal imaging with no change in clinical status		
* Consider magnetic resonance imaging if the initial imaging result is not of clinical suspicion for cancer remains. Adapted with permission from: Chou R, et al. Ann Intern Med 2011; 154		

 Prescription of simple analgesic medication and/or NSAIDs if required (see the box). An approach to management is outlined in the flowchart.

Advice and reassurance

Advice and reassurance for patients should include the components listed below.

• Encourage patients to:

- Stay active, continue daily activities and refrain from extended bed rest
- Continue work activities (modified if necessary); work participation plays an important role in recovery
- Take responsibility for their own management; self-management is the cornerstone of effective treatment.
- Reassure patients that:
- there is no reason to suspect serious

Effective interventions for acute and persistent non-specific low back pain

Acute pain

- Paracetamol
- NSAIDs
- Superficial heat
- Advice to remain active

Persistent pain

- Paracetamol
- NSAIDs
- Exercise therapy
- Multidisciplinary rehabilitation
- Spinal manipulation

damage or disease; such conditions are extremely rare

- The prognosis is likely to be good; most people improve rapidly and severe ongoing limitations are uncommon
- It is important to understand that 'hurt does not mean harm'
- They should maintain a positive attitude.

Avoid giving patients diagnostic labels based upon presumed pathophysiology such as disc degeneration, disc herniation or arthritis. Imaging findings showing these pathologies are seen in many people without low back pain, so their relation to back pain is unclear. Also avoid advising patients to let pain be the guide for return to usual physical activity, as patients should keep moving despite pain.

It is important to address workplace issues at the outset. ¹² Having an understanding of the patient's work context and job demands in relation to their physical capacity and beliefs may help to prevent and/or reduce work disability.

Communicating with the workplace/ employer to facilitate remaining at work, with modified duties if necessary, can be helpful, as can strategies to promote prompt return to work.

There is often a mismatch between the patient and the physician about expectations and beliefs about low back pain, and open communication during the consultation is crucial.¹³ There are several commonly held beliefs that may





result in poorer outcome, including the following:14

- The notion that fluctuations in pain intensity signify actual or potential anatomical damage/injury
- · Fear of performing particular activities or movements (including work) because of concerns of further damage
- · Catastrophic beliefs about long-term prognosis
- · Expectations regarding the need for imaging or investigations
- · Expectations associated with particular treatments, particularly a preference for passive treatments. Eliciting and addressing erroneous beliefs and identifying enablers and barriers that are likely to influence treatment adherence are an important part of the initial consultation.¹⁵ The presence of high levels of symptom reporting, psychological distress and strongly held mistaken beliefs should alert the GP to an increased likelihood of poor outcome. Addressing these factors early is likely to be important and may justify earlier follow up and active treatment.

Pain control

Medications

The goal of analgesic administration in the treatment of non-specific low back pain is to reduce, rather than abolish, pain in order to facilitate continued activity. A step up approach to medication use is recommended, as outlined in the Therapeutic Guidelines: Rheumatology.16 Paracetamol is the safest first choice, but consumption of the safest maximum dose on a time-contingent basis rather than on an ad hoc or as required basis should be recommended. Specific dosage recommendations such as these are important given evidence suggesting patients routinely underdose themselves, potentially leading to inadequate pain control.17

NSAIDs are an alternative to paracetamol but can also be combined with paracetamol. However, their potential benefits need to be considered in relation to their potential harms, particularly in high-risk patients. They should be prescribed for short periods of time (eg, up to three weeks), and patients should be monitored for adverse effects.

If analgesia remains insufficient to allow normal functioning, immediaterelease opioids in an appropriate dose for a short period may be considered.16 It should be noted that although administering stronger analgesics is intuitively reasonable, there is conflicting evidence as to whether this results in improved clinical outcomes. Any recommendations should take the risk profile and likelihood of side effects of these drugs into account, and patients should be monitored accordingly.

Other options

Non-pharmacological analgesic options in the treatment of non-specific low back pain include the use of heat packs and wraps, for which some evidence of effectiveness exists.18 Heat packs and wraps are low cost and have few reported side effects, and they also enable patients to take responsibility for their pain relief.

Managing recurrences

It should be noted that recurrences following an initial episode of low back pain are common.7 There is little research to recommend strategies that reduce the risk of recurrence, but patients should be alerted to its likelihood. Patients can be advised to follow the same activity and medication recommendations in the event of a recurrence. This will reinforce the idea of self-management and may obviate the need for consultation for future episodes.

Many patients will have some degree of low-level residual pain that persists over months. These symptoms are not necessarily indicative of serious pathology and do not usually interfere with normal function.19

Managing persistent pain

Management of patients with nonspecific low back pain who have severe pain persisting beyond two to three weeks should include reinforcement of the advice and reassurance provided previously.

Pharmacological treatment options

If the patient is still regularly taking an immediate-release opioid, switching to an equivalent dose of a modified-release opioid preparation may be considered,

again for a pre-specified time period (eg, up to 12 weeks).16

International guidelines are inconsistent on recommendations regarding anti-depressants and muscle relaxants.20 Some recommend antidepressants only where there is depressive comorbidity, others suggest that they can be used as an analgesic; however, the most recent Cochrane review on the subject does not recommend their use for low back pain.21 Trial evidence suggests that muscle relaxants are more effective than placebos for short-term relief from low back pain but the incidence of drowsiness, dizziness and other side effects is high.22

Physical therapy options

There are numerous physical therapy options available for patients with persisting low back pain, but only structured exercise programmes and spinal manipulative therapy are supported by sufficient evidence to warrant inclusion in most guidelines.20 Allied health professionals typically deliver these physical therapies over a six to twelve-week

Of these physical therapies, exercise programmes should be the first choice of treatment. Although therapeutic effectiveness may be equivalent to interventions such as spinal manipulative therapy, exercise provides additional benefits over more passive therapies. Exercise reinforces the principle that patients should be physically active and encourages patients to take an active role in management of their health. There is some evidence to suggest that regular exercise may have a role in prevention of recurrences.23 Additionally, increasing physical activity has been shown to confer numerous benefits beyond that for low back pain, for example for cardiovascular and mental health.

Importantly, simple advice 'to do some exercise' is probably ineffective. Exercise programmes should be supervised, high dose and individually prescribed, and should include stretching and strengthening components. Beyond these general principles, however, there is little evidence to support the superiority of one exercise type over another.24 This being the case, clinician expertise and patient preference may guide programme selection.



CHIROPRACTIC

- A SOLUTION FOR BACK PAIN

Staying active with the help of chiropractic treatment may well be the best solution

Scientific research shows that you should remain active - prolonged bed rest weakens the bone and muscles and reduces your chances of a full recovery - you may be advised to do gentle excercise to ease pain and help your body to recuperate.

Are you?

- * spending hours a day sitting at a desk or computer?
- * Slouch in front of the TV?
- * Sleep in a bed that is too hard or soft?
- * Hunching you back and shoulders in stressful situations?

Repeating daily activities such as bending, lifting and twisting may result in a "bad back".

Treating the cause not the symptoms:

as you go through life a slight loss of proper movements of the bones / joints can interfere with the healthy working of your spine and the nerves that pass through it. this can lead to pain. Chiropractic, unlike painkilling drugs treats the cause of pain not just the pain itself.

To free stiff joints and remove spinal nerve irratation, gentle specific adjustments (the chiropractic word for manipulation) can be done by hand. This effective drug free treatment is generally painless, although short-term discomfort can be experienced if your back is very painful. Ice/heat treatments and massage may be recommended.

For more information on chiropractic or where to find a CASA CHIROPRACTOR: Visit the CHIROPRACTIC ASSOCIATION OF SOUTH AFRICA website www.chiropractic.co.za

or call us on 0861 887 772

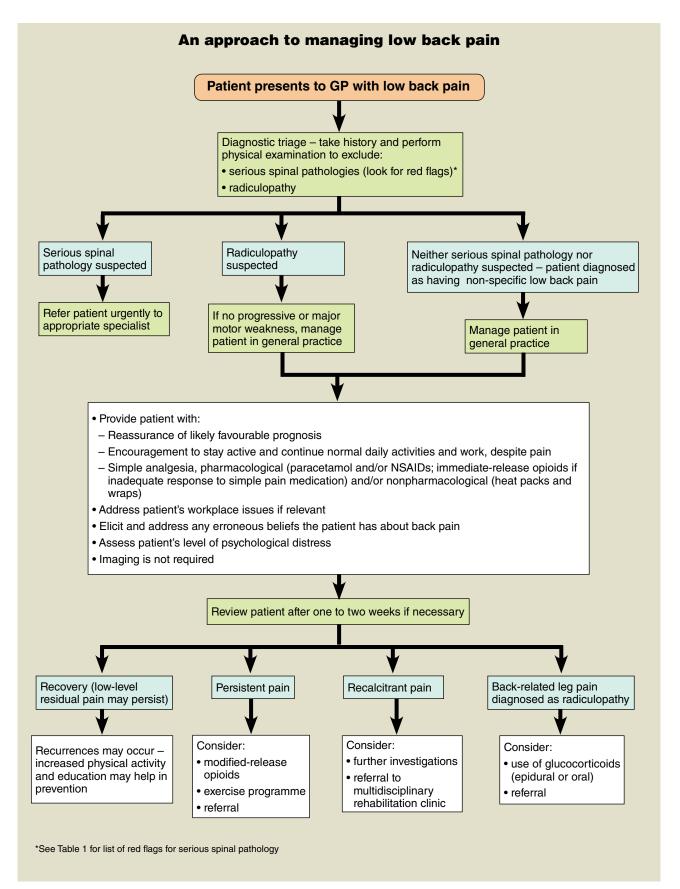
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With acknowledgement to the British Chiropractic Association











Ongoing contact with a professional is likely to be necessary to maintain motivation and adherence.²⁴

A range of allied health care professionals, including physiotherapists, osteopaths and chiropractors, are able to provide care to patients with low back pain. However, these professions are not all alike in their focus on encouragement of physical activity and self-management, and unfortunately this focus also does not necessarily concentrate along professional lines as individuals within each profession differ in their views. Communication and building relationships with allied health care professionals in your area may be worthwhile to find some that you can depend on to administer evidence-based care.

Treatments with no or limited evidence of efficacy

Numerous treatments commonly used in the treatment of low back pain are not supported by evidence and are not recommended. They include antidepressant medications, radiofrequency denervation, injections and traction. ^{21,25-27}

Other treatment options that are currently backed by limited evidence are also not recommended. These include acupuncture, lumbar supports, massage and transcutaneous electrical nerve stimulation.²⁷⁻³⁰

Managing recalcitrant low back pain

If sufficient improvement in persistent non-specific low back pain has not occurred despite a trial of best practice management as outlined above, further options can be considered. These include further investigations and referral to a multidisciplinary rehabilitation clinic (these may be referred to as pain clinics, depending on the setting).

Persistent, debilitating low back pain is often accompanied by problems of physical, psychological and social origin. These patients are unlikely to respond to a simple unimodal course of a physical therapy. Although the causal associations are not well understood, it is likely that effective management of these patients requires consideration of all of these factors.

There is evidence to support the effectiveness of multidisciplinary rehabilitation programmes in this popula-

tion of patients with long-term, severe symptoms.³¹ These programmes usually involve intensive treatment, including structured exercise, education and instruction in self-management, functional training and tailored psychological management, and are delivered by various health professionals (eg, physical therapists, rehabilitation specialists, psychologists, occupational physicians and occupational therapists).

An important feature of a successful multidisciplinary program appears to be the volume of therapy provided; successful programs generally involve at least 100 hours of therapy.³¹ Programmes should have a clear and defined focus on improving and sustaining the functional capabilities of patients.

Managing back-related leg pain

Low back pain accompanied by referred pain into one or both legs is usually associated with more significant loss of function.³² In many instances, referred pain does not indicate radiculopathy, and the treatment recommendations are the same as those for non-specific low back pain.

For those patients diagnosed with radiculopathy (typically, leg pain is more severe than back pain, there is unilateral pain that radiates below the knee, there is a positive straight-leg raise test, and other neurological signs are present), the prognosis is generally less favourable than for those with non-specific low back pain.⁴

Although specific mechanisms are not completely understood, it is likely pain stems from inflammation surrounding and/or compression of the nerve roots in the lumbar segments, usually due to herniation of the intervertebral disc.⁴

Similar to the treatment recommendations for non-specific low back pain, management in patients with radiculopathy includes education regarding the condition, advice to stay active and simple analgesic medications. There is also no need for routine imaging at the initial presentation. Translumbar, transsacral or transforaminal (or 'nerve root') epidural glucocorticoid injections may provide modest short-term (three to six weeks') pain relief, although evidence is somewhat inconsistent. 33,34 A two to threeweek trial of oral glucocorticoid may be

another treatment option but the efficacy of this has not been established.¹⁶

Patient review

Persistent lack of improvement in the face of appropriate management warrants patient review by the primary care clinician or referral to a colleague more experienced in low back pain management. Unfortunately a common pattern seen in patients with persistent low back pain is that the same physical treatments have been administered repeatedly for months or years with little sustained effect. In these cases, discussion with the treating clinician about alternative management options or referral elsewhere may be appropriate.

Role of imaging

Imaging should be restricted to those patients with low back pain in whom there is a strong suspicion of serious spinal pathology or surgical referral is being considered for persisting radicular features (Table 2).³

Imaging (plain radiographs, CT scans, MRI) of patients with non-specific low back pain in the first instance has not been shown to improve clinical management and may even lead to poorer clinical outcomes. There is a poor correlation between clinical features and imaging findings, and abnormal findings are common in people without back pain and increase with age. For example, a study of MRI in people without back pain over the age of 60 found that 21% had spinal stenosis, 36% had a herniated disc and 90% had a bulging or degenerated disc. 35

Referral for imaging is associated with increased costs and inconvenience and with exposure to unnecessary radiation, is unlikely to improve patient satisfaction and may reinforce negative beliefs regarding anatomic injury. ^{3, 36} National guidelines from around the world uniformly recommend that imaging not be performed for patients with non-specific low back pain of short duration unless there are 'red flags'. ^{3,16,37,38}

Results of investigations such as electromyography, pathology or nerve conduction studies similarly show little correlation with reported symptoms.

Continued on page 35





Syk

Syk is an important mediator of immunoreceptor signalling in macrophages, neutrophils, mast cells, synovial fibroblasts and B-cells. The net downstream effect of Syk activation includes increased IL-6 and matrix metalloproteinase production. A recently published phase II clinical trial confirmed the positive impact of Syk inhibition on reducing disease activity, and supported the Syk pathway as a potential new drug target for the treatment of RA.¹⁹

MAPKs

MAPKs are intracellular enzymes that transmit signals to the nucleus, resulting in gene transcription. They have been found in the synovial lining and endothelium of vessels within RA synovium. MAPKs have been implicated in regulating TNF, IL-1 and IL-6 signalling, and animal studies demonstrated their efficacy in reducing joint swelling and damage.⁴⁶

New generation monoclonal antibodies

New generation monoclonal antibodies are also on the horizon for RA treatment. Following the success of rituximab, four new humanised B-cell-depleting therapies are under current evaluation: ocrelizumab, ofatumumab, epratuzumab, and veltuzumab. Research is also under way on developing monoclonal antibodies against novel targets, such as IL-17 (secukinumab) and the haemopoietic regulators, granulocyte colony-stimulating factor and granulocytemacrophage colony-stimulating factor (mavrilimumab).¹⁷

Conclusion

Methotrexate remains the drug of choice for the treatment of patients with active RA. There is evidence it is equally efficacious as the biological agents in the treatment of early RA. In patients whose disease is inadequately controlled either with methotrexate treatment or with a combination of other non-biological DMARDs, there is an array of highly effective agents that are now available to treat the disease. The availability of these emerging biological agents has radically changed the approach towards RA management.

The prescription of these new therapies remains in the domain of the specialist rheumatologist (or immunologist with experience in managing RA). However, GPs play a vital role in providing early patient referral for specialist evaluation and partnering with specialists in monitoring patients for the development of treatment- and disease-related complications. The expectation of treatment is now no longer simply to palliate patient symptoms, but to move patients with early RA into long-term remission.

References are available on request.

Non-Specific Low Back Pain

Continued from page 25

Role of surgery

There is a limited role for surgery in treating patients with low back pain. Decompression surgery may be effective for improving leg pain in patients with spinal stenosis but the value of discectomy, disc replacement and fusion for non-specific low back pain is unclear at best. In all cases, a trial of nonsurgical management before surgical opinion is appropriate. For patients with radiculopathy, although surgery can provide short-term pain relief, long-term outcomes may be comparable to conservative management.

Prevention of low back pain

Effective prevention of low back pain is not well understood. This applies to both primary and secondary prevention. There is some evidence to support the influence of increasing physical exercise and improving education levels, specifically the understanding of low back pain as a biopsychosocial condition. Education should also promote a shift in beliefs regarding the consequences of low back pain, particularly work absence, fear of physical activity and implications for continuing daily activities. On the primary prevention of the prevention of the prevention of the primary and secondary prevention.

Conclusion

Low back pain is a prevalent and costly health condition and is the most common musculoskeletal reason for seeking primary care. Serious conditions relating to low back pain present extremely rarely in general practice and investigations for these are recommended only if red flags are present. The prognosis for patients with short-term symptoms of non-specific low back pain is good, and initial management involves advice to maintain physical activity, reassurance and the provision of simple analgesia. If symptoms persist, stronger medication and physical therapies can be recommended. Multi-disciplinary rehabilitation clinics provide an option for patients with severe, disabling symptoms of long duration. Clinicians should avoid providing pathoanatomical labels, and there is no place for routine imaging or pathology tests in patients with non-specific low back pain.

References are available on request.