



Acute low back pain

Key reviewers:

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Key concepts:

- Acute low back pain is common and most patients will recover fully within three months
- Serious causes are rare and can be excluded with careful history and examination
- Radiological studies are not required for acute low back pain in the absence of red flags
- An exact diagnosis is often not possible, nor needed for management
- Patients' beliefs and attitudes warrant as much attention as the anatomical and pathological aspects of their condition
- Fear about pain is a major determinant of disability and possible chronicity
- Management should include reassurance, education and helping the patient stay active
- Adequate analgesia is important to allow the patient to stay active

www.bpac.org.nz keyword: lowbackpain

Acute low back pain is common and often relapsing

Low back pain is discomfort, muscle tension or stiffness localised to the area around the lumbar spine. Back pain may radiate to the groin, buttocks or legs as referred somatic pain and may be associated with lumbar radicular pain such as sciatica.

In any given year approximately one third of adults will suffer from low back pain and one third of these will seek help from a health practitioner.¹ Most people with low back pain self-treat with over-the-counter medications and lifestyle changes.²

Low back pain is described as acute if present for less than six weeks, sub-acute between six weeks and three months, and chronic if it continues for longer than three months.

Low back pain varies in severity and associated disability. Most episodes of acute, non-specific low back pain resolve within two weeks. 70–90% of patients will recover fully from an acute episode within three months.^{3,4} However, subsequent relapse is common and many individuals will have recurring episodes of acute low back pain.

Only a small group will go on to suffer from chronic pain and disability.

Acute low back pain can be separated into three categories

The aim of the history and examination is to separate people with acute low back pain into three categories. Those with:⁵

- Serious pathology (red flags – see box)
- Radicular nerve involvement
- Non-specific back pain (this is a diagnosis of exclusion)

Red Flags:

- Trauma
- Unrelenting pain, or pain worse at night (supine)
- Age <20 years, or new back pain age >50 years
- History of cancer
- Systemic symptoms
- IV drug use
- Immunosuppression or steroids
- Widespread or progressive neurological deficit

Serious causes of acute low back pain are rare and include:⁶

- Osteoporotic or trauma related vertebral fracture (4%)
- Cancer involving the lumbar spine (0.66%)
- Inflammatory disease such as ankylosing spondylitis (0.3%)
- Spinal osteomyelitis associated with IV drug use, urinary tract infection or skin infection (0.01%)

Key history for acute low back pain

It is important to determine:

- Onset and duration of pain
- Site and radiation
- Precipitating and relieving factors
- Severity and functional impact
- Any neurological deficit
- Any symptoms of systemic illness

Onset and duration

Patients may recall a specific event that triggered their acute low back pain, however it can frequently occur for no apparent reason, or after ordinary activity.

A history of trauma, such as a fall or motor vehicle accident, may indicate vertebral fracture or sacro-iliac joint problems.

Pain that develops slowly may indicate serious pathology.

Site of the pain and radiation

Many people have pain only in their back. If there is associated leg pain it may be somatic referred pain or radicular (neurogenic) pain.

For people who present with back and leg pain, determine which pain is dominant. One way to check this is to ask, “Which pain would you like to be rid of first?”⁷

When the leg pain is dominant it is more likely to be radicular in origin. Radicular pain is often described as shooting or stabbing, like an “electric shock” and may be associated with pins and needles or numbness. Somatic referred back pain is usually dull in nature, “like a toothache” (Table 1). Both types of pain may co-exist.

Precipitating and relieving factors

Typically non-specific back pain feels better at rest and worse with activity. The opposite occurs with the inflammatory arthritides such as ankylosing spondylitis. Patients with disc disorders may find prolonged sitting or forward flexion aggravates symptoms. Leg dominant pain that resolves with flexion and sitting and worsens with extension may be claudicant pain from spinal stenosis (if normal lower limb pulses).

Severity and functional impact

What effect is the pain having on activities or sleep? Severe unremitting pain, especially if sleep is disturbed, is a red flag. A numerical or functional scale to assess the severity of the back pain and to help monitor progress may be useful.

Neurological deficit

Ask about any change in gait, perineal sensation, sexual function, micturition or defaecation.

Symptoms of systemic illness

Ask about any symptoms of systemic illness such as weight loss, fatigue, night sweats or fever.

Table 1: Distinguishing features of lumbar radicular and somatic referred pain⁸

	Radicular pain	Somatic referred pain
Distribution	Entire length of lower limb BUT below knee>above knee	Entire length of lower limb BUT proximal>distal
Pattern	Narrow band Travelling	Wide area with indistinct boundaries Static
Quality	Shooting, lancinating, like an electric shock	Dull, aching, like an expanding pressure
Depth	Deep as well as superficial	Deep only. No cutaneous quality

Base the examination on the history

The history will guide the extent of the examination. Examination aims to identify any serious pathology (very rare), and differentiate between patients with radicular pain (a few) and those with non-specific low back pain (the majority).

A minimal musculoskeletal examination for acute low back pain consists of:

- Observing posture, gait and general demeanour
- Checking for any structural abnormality or tenderness
- Assessing range of motion

A neurological examination is required if the patient has pain in the leg or if the history suggests any neurological symptoms such as paraesthesia, weakness or sphincter dysfunction.⁹

 See page 17 for a five minute back examination with neurological assessment.

Symptoms and signs of lumbar radicular irritation:

- Leg pain greater than back pain
- Narrow band of pain radiating 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

A more general examination should be considered if the picture is atypical (see box).

Atypical causes of back pain¹⁰

Consider referred visceral pain presenting as low back pain, such as:

- Gastrointestinal disease (e.g. inflammatory bowel disease, pancreatitis, diverticulitis)
- Renal disease (e.g. renal stones, pyelonephritis)
- Abdominal aortic aneurysm
- Gynaecological disease (e.g. pelvic inflammatory disease)

Consider other disorders such as fibromyalgia and herpetic neuralgia.



Table 2: Red flags and what to do (Adapted from WeMeRec 2008)¹²

<ul style="list-style-type: none">▪ Major trauma or minor trauma with osteoporosis  <p>Consider plain x-ray of lumbar spine</p>
<ul style="list-style-type: none">▪ Unrelenting pain, pain worse at night (supine)▪ Age <20 years, or new back pain age >50 years▪ History of cancer▪ Systemic symptoms e.g., fever, weight loss▪ IV drug use▪ Immunosuppression or steroids  <p>Consider urgent investigation (CBC, CRP, Alk P, Ca²⁺, PSA, x-ray) and referral</p>
<ul style="list-style-type: none">▪ Sphincter disturbance e.g. recent bladder dysfunction (retention, overflow incontinence)▪ Gait disturbance: severe and/or progressive neurological deficit in lower extremities▪ Saddle anaesthesia: diminished sensation over the buttocks, posterior-superior thighs and the perineal region in the “saddle” distribution  <p>Possible cauda equina REFER IMMEDIATELY FOR EMERGENCY ASSESSMENT (see page 12)</p>

Investigation of acute low back pain

Investigation depends on which category of low back pain the patient falls into and is divided into possible serious and non-serious conditions (non-specific back pain and back pain with radicular nerve involvement).

Investigation of serious conditions

Serious conditions are detected with red flags and investigated and referred as appropriate (Table 2).

Investigation of non-serious conditions

95% of low back pain is not serious. Most acute low back pain is likely to be a functional problem of the musculoskeletal system and is termed non-specific low back pain (previously known as mechanical pain).¹¹ Approximately one in twenty people with acute low back pain will have radicular pain.

Most patients with back pain do not require radiological investigations¹³

Lumbar x-ray

X-ray of the lumbar spine is not required for non-specific back pain and lumbar radicular pain in patients aged 20 to 50 years.^{5, 14} In this situation x-rays do not provide extra information and often confound the picture with false positive findings such as spondylolisthesis, which occurs as often in people with and without acute low back pain. It also exposes the patient to relatively high doses of radiation (approximately one hundred and fifty times the dose of a chest x-ray).

An x-ray may provide reassurance for a doubtful patient, although the demonstration of incidental asymptomatic abnormalities may cause anxiety.

Lumbar x-ray is of benefit in younger patients with suspected ankylosing spondylitis (anteroposterior, lateral and oblique views), rare spinal developmental disorders and in older patients with suspected osteoporotic collapse. X-rays should be considered in all patients who have had recent trauma irrespective of age.

If serious pathology is suspected an x-ray of the lumbar spine should be obtained but not relied upon as even an advanced tumour may not show on the films. A plain x-ray will only show pathology once 50% of bone destruction has occurred. If underlying disease is suspected, check bloods for CBC, CRP, Alk P, Ca²⁺, PSA and arrange referral for bone scan or MRI.

MRI

MRI is not usually appropriate for patients with predominant back pain and is best reserved for the investigation of radicular leg pain, that is not settling with standard treatment, or as an alternative to isotope bone scan in cases of possible serious pathology. Similar to lumbar x-ray, false positives are common.

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Cauda Equina Syndrome

The spinal cord ends at the lower border of the first lumbar vertebra. The cauda equina, or “horse’s tail”, represents the continuation of the lumbosacral nerve roots in the subarachnoid space into the sacrum. Cauda equina syndrome is the result of mechanical compression of the neural elements below the end of the spinal cord (L1–L2). This causes pain and progressive neurological deficit, involving sphincters, gait and perineal sensation.

The conus medullaris syndrome is a similar syndrome which in contrast only causes sphincter disturbance. This occurs with compression of spinal elements just above the cauda equina at T12–L1.

The most common cause of cauda equina syndrome is central herniation of a lumbar intervertebral disc. Other possible causes include tumours, trauma, infections, spinal stenosis and spondylolisthesis.

Presentation: progressive neurological deficit

Most cases are of sudden onset and progress rapidly within hours or days. However cauda equina syndrome can evolve slowly and patients do not always complain of pain. Common presenting symptoms and signs include:

- Low back pain; usually the patient is in significant distress with severe pain
- Bilateral leg symptoms; including pain (classically bilateral lumbar radicular pain), lower motor neurone weakness (ranging from difficulty walking to complete paralysis) and sensory changes
- Saddle anaesthesia; loss of perineal sensation
- Urinary dysfunction; retention, difficulty starting or stopping a stream of urine, overflow incontinence and decreased bladder and urethral sensation

- Bowel disturbances; may include incontinence or constipation, although a patient may have no complaints about bowel function but be found to have reduced anal tone on per rectum (PR) examination
- Sexual dysfunction

Cauda equina syndrome is an emergency

The diagnosis is usually possible from the history and examination. Always err on the side of caution rather than risk leaving your patient with permanent disability. Refer any patient with suspected cauda equina immediately for a specialist consultation (neurosurgical or oncology if known cancer).

Urgent surgical spinal decompression is indicated for most patients to prevent permanent neurological damage. If surgery cannot be performed, radiotherapy may relieve cord compression caused by malignant disease.

Prognosis is dependent on the underlying cause, the extent of the initial neurological deficit and the time taken before effective treatment is provided. Late diagnosis and treatment increases the risk of a permanent neurological deficit.¹⁵

