

# Low Back Pain

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## KEYWORDS

- Acute low back pain • Chronic low back pain • Risk factors • Cause • Diagnosis
- Imaging • Treatment • Sciatica

## KEY POINTS

- Low back pain is a common, frequently recurring condition that often has a nonspecific cause.
- History and physical examination should focus on evaluation for evidence of systemic or pathologic causes.
- Imaging is only indicated when there is evidence of neurologic deficits or red flags to suggest fracture, malignancy, infection, or other systemic disease, or when symptoms do not improve after 4 to 6 weeks.
- Most nonspecific low back pain will improve within several weeks with or without treatment.
- Back pain that radiates to the lower extremities, occurs episodically with walking or standing erect, and is relieved by sitting or forward spine flexion is typical of neuroclaudication and suggests central spinal stenosis.
- All patients with acute or chronic low back pain should be advised to remain active.
- The treatment of chronic nonspecific low back pain involves a multidisciplinary approach targeted at preserving function and preventing disability.
- Urgent surgical referral is indicated in the presence of severe or progressive neurologic deficits or signs and symptoms of cauda equina syndrome.

## INTRODUCTION

Low back pain affects a significant proportion of the population.<sup>1–5</sup> The precise incidence and prevalence of low back pain are difficult to characterize due to significant heterogeneity in the epidemiologic studies. In a survey of Saskatchewan adults, 84% of participants reported experiencing at least one episode of back pain in their lifetime.<sup>6</sup> A 2002 US National Health Interview Study found that 26.4% of the 30,000 participants had experienced at least one full day of back pain in the past 3 months.<sup>7</sup> A 2010 review article reported 1-year incidences of first time, any time, and recurrent

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Financial Disclosures: None (A.L. Golob); UpToDate chapter royalties (J.E. Wipf).

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Med Clin N Am 98 (2014) 405–428

<http://dx.doi.org/10.1016/j.mcna.2014.01.003>

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0025-7125/14/\$ – see front matter Published by Elsevier Inc.

low back pain episodes as ranging from 1.5% to 80%, and the 1-year prevalence of low back pain ranging from 0.8% to 82.5%.<sup>8</sup> These findings are summarized in **Table 1**.

The incidence of low back pain peaks in the third decade of life. The prevalence increases until age 60 to 65 and then gradually declines.

Commonly reported risk factors for low back pain include physical, psychological, social, and occupational factors and are summarized in **Table 2**.<sup>2,6</sup>

Low back pain has an enormous social and economic impact. It is a leading cause of work absenteeism globally and the second most common cause of missed work days in the United States.<sup>9,10</sup> Direct medical costs attributed to the evaluation and treatment of low back pain are estimated to exceed \$33 billion annually in the United States. When the indirect costs of missed work and decreased productivity are added, the total costs exceed \$100 billion each year.<sup>2</sup>

Primary care providers play a key role in the evaluation and treatment of low back pain. Indeed, low back pain is the chief complaint in about 2.3% of all ambulatory physician visits, representing about 15 million office visits per year, and is second only to upper respiratory symptoms as a symptom prompting office evaluation.<sup>7</sup>

## PATHOPHYSIOLOGY

### Anatomy

There are 5 lumbar vertebrae, each of which is composed of a vertebral body, 2 pedicles, 2 lamina, 4 articular facets, and a spinous process. Between each pair of vertebrae are the foramina, openings through which pass the spinal nerves, radicular blood vessels, and sinuvertebral nerves. The spinal canal is formed anteriorly by the posterior surface of the vertebral bodies, intervertebral discs, and posterior longitudinal ligament, laterally by the pedicles, and posteriorly by the ligamentum flavum and lamina (**Fig. 1**).

In the normal spine, the anterior structures including the vertebral bodies and intervertebral discs perform weight-bearing and shock-absorbing functions. The posterolateral structures, including the vertebral arches, lamina, transverse, and spinous processes, provide protection for the spinal cord and nerve roots. Balance, flexibility, and stability are provided by the facet joints and paraspinal muscles and ligaments.

### Physiology

Low back pain is often characterized in terms of radiologic findings (spondylosis, spondylolisthesis, spondylolysis) and clinical and neurologic findings (lordosis, kyphosis, radiculopathy, sciatica). These terms are defined in **Table 3**.

Low Back Pain (LBP) Episode	Incidence or Prevalence
1-y incidence of first ever LBP episode	6.3%–15.4%
1-y incidence of any LBP episode	1.5%–36%
1-y incidence of recurrent LBP episode	24%–80%
Point prevalence of LBP episodes	1.0%–58.1% (mean 18.1%, median 15.0%)
1-y prevalence of LBP episodes	0.8%–82.5% (mean 38.1%, median 37.4%)

Data from Hoy D, Brookes P, Blyth F, et al. The epidemiology of low back pain. *Best Pract Res Clin Rheumatol* 2010;24(6):769–81.

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