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Assessment and Management of Acute Low Back Pain

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Acute low back pain is commonly treated by family physicians. In most cases, only conservative therapy is needed. However, the history and physical examination may elicit warning signals that indicate the need for further work-up and treatment. These “red flags” include a history of trauma, fever, incontinence, unexplained weight loss, a cancer history, long-term steroid use, parenteral drug abuse, and intense localized pain and an inability to get into a comfortable position. Treatment usually consists of non-steroidal anti-inflammatory agents or acetaminophen and a gradual return to usual activities. Surgery is reserved for use in patients with severe neurologic deficits and, possibly, those with severe symptoms that persist despite adequate conservative treatment.

Low back pain is a problem that family physicians confront in their patients almost daily. It is so prevalent that the Agency for Health Care Policy and Research (AHCPR) of the U.S. Department of Health and Human Services has developed and published national guidelines to assist primary care physicians in the appropriate care of affected patients.¹ A 23-member multidisciplinary committee compiled the guidelines, which focus on low back pain of less

than three months' duration. This review incorporates many of that committee's recommendations.

Epidemiology

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Low back pain is one of the top 10 reasons patients seek care from a family physician.² In epidemiologic studies of different populations, the prevalence of low back pain has varied from 7.6 to 37 percent. Peak prevalence is in the group between 45 and 60 years of age,³ although back pain is also reported by adolescents and by adults of all ages.

Considering the overall expenses involved in treating low back pain, the condition has broad implications. Eighty percent of adults seek care at some time for acute low back pain, and one third of all disability costs in the United States are due to low back disorders.⁴ The direct costs of diagnosing and treating low back pain in the United States were estimated in 1991 to be \$25 billion annually. Indirect costs, including lost earnings, are even higher.⁵ Effective diagnosis and treatment of low back pain can save health care resources and relieve suffering in a multitude of patients.

Duration of Symptoms

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Back pain is classified into three categories based on the duration of symptoms. Acute back pain is arbitrarily defined as pain that has been present for six weeks or less. Subacute back pain has a six- to 12-week duration and chronic back pain lasts longer than 12 weeks.⁶

Using these three categories, we can make predictions about prognosis. At least 60 percent of patients with acute low back pain return to work within one month, and 90 percent return within three months.⁷ With minimal intervention, most patients improve in the first few weeks.

Clinical Categories of Low Back Pain

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Low back pain can be caused by many conditions, both serious and benign. Because of this, the AHCPR has grouped back pain into three categories: potentially serious spinal conditions, sciatica and nonspecific back symptoms.

POTENTIALLY SERIOUS SPINAL CONDITIONS

Spinal tumor, infection, fracture and the cauda equina syndrome are potentially serious causes of acute low back pain. These conditions are suggested by characteristic findings from the history and physical examination (*Table 1*). Immediate further work-up and treatment are usually needed.

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TABLE 1

Causes of Low Back Pain

<i>CONDITION</i>	<i>CLINICAL CLUE</i>
Nonspecific back pain (mechanical back pain, facet joint pain, osteoarthritis, muscle sprains, spasms)	No nerve root compromise, localized pain over lumbosacral area
Sciatica (herniated disc)	Back-related lower extremity symptoms and spasm in radicular pattern, positive straight leg raising test
Spine fracture (compression fracture)	History of trauma, osteoporosis, localized pain over spine
Spondylolysis	Affects young athletes (gymnastics, football, weight lifting); pain with spine extension; oblique

SCIATICA

Back-related lower extremity symptoms suggest nerve root compromise. Sciatica is often debilitating but, in most cases, the pain abates with conservative therapy.

NONSPECIFIC BACK SYMPTOMS

Some patients have symptoms primarily in the back that suggest neither nerve root compromise nor a serious underlying condition.¹ Mechanical low back pain is in this category. These patients also usually improve with conservative treatment.

With this clinical classification, the examiner can use the history and physical findings to specify the type of back pain affecting the patient and properly treat patients who have potentially serious spinal conditions.

History**Jump to section +**

The diagnosis of low back pain requires a careful history to determine whether the causes are mechanical, or secondary and more threatening. Mechanical causes of acute low back pain include dysfunction of the musculoskeletal and ligamentous structures. Pain can originate from the disc, annulus, facet joints and muscle fibers. Mechanical low back pain generally has a favorable outcome, but back pain with a secondary cause requires treatment for the underlying condition.

Fortunately, secondary causes of low back pain are much less frequent than mechanical causes. An important consideration in the patient's history is age. Patients older than 50 and younger than 20 are more likely to have secondary causes. Clinical findings that may indicate an underlying disease

are listed in [Table 1](#).

Less common secondary causes of acute low back pain include metabolic diseases, inflammatory rheumatologic disorders, referred pain from other sources, Paget's disease, fibromyalgia and psychogenic pain^{8,9} ([Table 2](#)).

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TABLE 2
Differential Diagnosis of Low Back Pain

Primary mechanical derangements
Ligamentous strain
Muscle strain or spasm
Facet joint disruption or degeneration
Intervertebral disc degeneration or herniation
Vertebral compression fracture
Vertebral end-plate microfractures
Spondylolisthesis
Spinal stenosis
Diffuse idiopathic skeletal hyperostosis
Scheuermann's disease (vertebral epiphyseal aseptic necrosis)
Infection

In general, clues to secondary causes of low back pain can be found in the history and physical examination. These are referred to as “red flags,” and they warrant further diagnostic work-up and immediate treatment ([Table 3](#)).

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TABLE 3

Red Flags for Acute Low Back Pain

History

Cancer

Unexplained weight loss

Immunosuppression

Prolonged use of steroids

Intravenous drug use

Urinary tract infection

Pain that is increased or unrelieved by rest

Fever

Significant trauma related to age (e.g., fall from a height or motor vehicle accident in a young patient, minor fall or heavy lifting in a potentially osteoporotic or older patient or a person with possible osteoporosis)

Bladder or bowel incontinence

Urinary retention (with overflow incontinence)

Physical Examination

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The physical examination is not as important as the history in identifying secondary causes of acute low back pain. Nevertheless, certain aspects of the physical examination are considered important.

GAIT AND POSTURE

Observation of the patient's walk and overall posture is suggested for all patients with low back pain. Scoliosis may be functional and may indicate underlying muscle spasm or neurogenic involvement.

RANGE OF MOTION

The examiner should record the patient's forward flexion, extension, lateral flexion and lateral rotation of the upper torso. Pain with forward flexion is the most common response and usually reflects mechanical causes. If pain is induced by back extension, spinal stenosis should be considered. Unfortunately, the evaluation of spinal range of motion has limited diagnostic use,¹⁰ although it may be helpful in planning and monitoring treatment.

PALPATION OR PERCUSSION OF THE SPINE

Point tenderness over the spine with palpation or percussion may indicate fracture or an infection involving the spine. Palpating the paraspinous region may help delineate tender areas or muscle spasm.

HEEL-TOE WALK AND SQUAT AND RISE

A patient unable to walk heel to toe, and squat and rise may have severe cauda equina syndrome or neurologic compromise.

PALPATION OF THE SCIATIC NOTCH

Tenderness over the sciatic notch with radiation to the leg often indicates irritation of the sciatic nerve or nerve roots.

STRAIGHT LEG RAISING TEST

With the patient in the supine position, each leg is raised separately until pain occurs. The angle between the bed and the leg should be recorded. Pain occurring when the angle is between 30 and 60 degrees is a provocative sign of nerve root irritation (*Figure 1, top*). Bending the knee while maintaining hip flexion should relieve the pain, and pressure in the popliteal region should worsen it (popliteal compression test).¹¹ If placing the knee back in full extension during straight leg raising and dorsiflexing the ankle also increase the pain (Lasègue's sign), nerve root and sciatic nerve irritation is likely.

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FIGURE 1.

The result of straight leg raising is positive in 95 percent of patients with a proven herniated disc at surgery, but it is also positive in 80 to 90 percent of patients without any form of disc protrusion at surgery.¹² In contrast, crossed straight leg raising is less sensitive but much more specific for disc herniation. In the crossed straight leg raising test, the contralateral, uninvolved leg is raised (*Figure 1, bottom*). The test result is positive when pain is produced.

REFLEXES AND MOTOR AND SENSORY TESTING

Testing knee and ankle reflexes in patients with radicular symptoms often helps determine the level of spinal cord compromise. An altered knee or ankle reflex alone does not suggest the need for invasive management because this finding is generally transient and fully reversible.⁸

Weakness with dorsiflexion of the great toes and ankle may indicate L5 and some L4 root dysfunction. Sensory testing of the medial (L4), dorsal (L5) and lateral (S1) aspects of the foot may also detect nerve root dysfunction.¹

LIMITED NEUROLOGIC TESTING

In the primary care of patients with low back pain and leg symptoms, the neurologic examination can be limited to just a few tests. These include the testing of dorsiflexion strength of the ankle and great toe, ankle reflexes and light touch over aspects of the foot, as well as the straight leg raising test. This abbreviated neurologic examination of the lower extremities allows the detection of most clinically important radiculopathy related to lumbar disc herniation. If patients with abnormal findings on these tests do not show improvement by one month, further diagnostic work-up or referral to a specialist is necessary.⁸ Those with progressive symptoms should undergo further evaluation without delay.

Laboratory Tests

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Laboratory tests generally are not necessary in the initial evaluation of acute low back pain. If tumor or infection is suspected, a complete blood cell count and erythrocyte sedimentation rate should be obtained.¹ Other blood studies, such as testing for HLA-B27 antigen (present in ankylosing spondylitis) and serum protein electrophoresis (results abnormal in multiple myeloma), are not recommended unless clinically warranted. Additional laboratory tests, such as urinalysis, should be tailored to the possible diagnoses suggested by the history and physical findings.

Radiographic Evaluation

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Plain radiographs are not recommended for the routine evaluation of acute low back pain within the first month unless a finding from the history and clinical examination raises concern (*Table 4*).¹³ If red flags suggest cauda equina syndrome or progressive major motor weakness, the prompt use of computed tomography (CT), magnetic resonance imaging, myelography or combined CT and myelography is recommended. In the absence of red flags after one month of symptoms, it is reasonable to obtain an imaging study if surgery is being considered.¹

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TABLE 4

Selective Indications for Radiography in Acute Low Back Pain

Age > 50 years

Significant trauma

Neuromotor deficits

Unexplained weight loss (10 lb in six months)

Suspicion of ankylosing spondylitis

Drug or alcohol abuse

History of cancer

Use of corticosteroids

Temperature $\geq 37.8^{\circ}\text{C}$ (100.0°F)

Recent visit (within 1 month) for same problem and no improvement

Patient seeking compensation for back pain

Adapted with permission from Deyo RA.

Treatment

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Most patients require only symptomatic treatment for acute low back pain. In fact, about 60 percent of patients with low back pain report

improvement in seven days with conservative therapy, and most note improvement within four weeks.¹⁴ Patients should be instructed to watch for worsening symptoms such as an increasing loss of motor or sensory functions, increasing pain and the loss of bladder or bowel function. Should any of these occur, the patient should undergo further evaluation and treatment immediately, with weekly follow-up.

Patients should gradually return to their normal activities, as tolerated. Continuing ordinary activities within the limits permitted by pain leads to a more rapid recovery than either bed rest or back-mobilizing exercises.¹⁵

Patients with acute low back problems benefit from exercise programs, if started early and if the exercises cause minimal mechanical stress on the back. The goal of an exercise program is, first, to prevent debilitation related to inactivity and, second, to improve activity tolerance and return patients to their highest level of functioning as soon as possible.¹

Medications commonly used for the treatment of acute low back pain include aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen and, possibly, muscle relaxants. Patients taking opioid analgesic drugs, often used in the first few days after the development of acute low back pain, do not return to full activity sooner than patients taking NSAIDs or acetaminophen.¹⁶ Muscle relaxants are more effective than placebo but no better than NSAIDs in relieving acute low back pain. Oral corticosteroids and antidepressants do not appear to be effective in patients with acute low back pain, and their use is not recommended.¹

Spinal manipulation has been shown in several randomized trials to be beneficial.¹⁷ Shoe insoles—over-the-counter foam or rubber inserts and custom-made orthotics—may also be beneficial in some patients. Spinal traction, transcutaneous electrical nerve stimulation, biofeedback, trigger-point injections, facet joint injections and acupuncture are usually not helpful in the management of acute low back pain.¹ Surgery may be indicated in selected patients who are not helped by conservative treatment and who have debilitating symptoms after one month of therapy. Patients with red flags noted at the initial evaluation may be candidates for immediate surgery.

Difficulties in Diagnosing Acute Low Back Pain

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Nonorganic factors are sometimes important contributors to the symptoms of acute low back pain. Psychosocial factors can be economic (e.g., greater financial compensation when not working) or social (e.g., job dissatisfaction). Another factor is pending litigation. To determine whether psychosocial factors are relevant, the examiner can obtain “pain drawings” by asking the patient to mark the type and distribution of the pain on a figure of the human body. If the distribution is nonanatomic, a psychogenic cause is highly likely.¹⁸ The Waddell tests, a set of five

maneuvers easily performed during a routine physical examination, identify patients in whom nonorganic issues play an important role in the persistence of symptoms (*Table 5*).¹⁹

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TABLE 5
Waddell's Tests for Nonorganic Physical Signs

TEST	INAPPROPRIATE RESPONSE*
Tenderness	Superficial, nonanatomic tenderness to light touch
Simulation	
Axial loading	Vertical loading on a standing patient's skull produces low back pain
Rotation	Passive rotation of shoulders and pelvis in same plane causes low back pain
Distraction	Discrepancy between findings on sitting and supine straight leg raising tests
Regional disturbances	

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Copies of the Clinical Practice Guideline no. 14, Acute Low Back Problems in Adults: Assessment and Treatment, are available (cost: \$5) from the Agency for Health Care Policy and Research Publications Clearinghouse, P.O. Box 8547, Silver Spring, MD 20907; telephone: 1-800-358-2925; Web site: <http://www.ahcpr.gov>.

REFERENCES show all references

1. Bigos SJ, Bowyer OR, Braen GR, Brown K, Deyo R, Haldeman S, et al. Acute low back problems in adults. Clinical practice guideline no.



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PDF | Low back pain (LBP) is a considerable public health problem which combines high frequency, healthcare consumption and societal cost. In Belgium, | Find, read and cite all the research you need on ResearchGate. Episodes of back pain are usually transient. For many patients with acute LBP or radicular pain, the complaints will disappear without any intervention. The resulting pathways on management of low back pain and radicular pain underpin the importance of multidisciplinary teamwork. Conclusions: Essential building elements were identified from literature and established pathways and were successfully integrated in a Belgian national low back pain and radicular pain pathway using an integrative consensus approach. Low back pain is common in adults and contributes significantly to morbidity. The clinical assessment should include a triage approach to identify the small number of patients with serious disease. Management should begin with advice and simple analgesics. More complex treatments are reserved for those who do not respond. 1. The recommended first-line care for acute low back pain is advice, simple analgesics and review after one week. 2. Acute low back pain that has not resolved within one week requires referral for MRI or CT scan to establish the cause of the pain. Answers to self-test questions. 1. True. An accurate pain assessment is essential during the medical evaluation of acute low back pain and can provide vital information to assist diagnosis and guide management. Some specific considerations when assessing the patient with acute back pain are listed below: Severity. Figure - National Institute of Clinical Studies (2011) Emergency Care Pain Management Manual. Pain Score Severity. No pain = Pain Score of 0. This guideline covers assessing and managing low back pain and sciatica in people aged 16 and over. It outlines physical, psychological, pharmacological and. pharmacological management of sciatica. These supplement the existing recommendations on: assessment of low back pain and sciatica. non-invasive treatments for low back pain and sciatica. invasive treatments for low back pain and sciatica. Who is it for? Healthcare professionals.

Commissioners and providers of healthcare.

People with low back pain or sciatica, and their families and carers. Guideline development process. How we develop NICE guidelines. Acute low back pain is commonly treated by family physicians. In most cases, only conservative therapy is needed. However, the history and physical examination may elicit warning signals that indicate the need for further work-up and treatment. These "red flags" include a history of trauma, fever, incontinence, unexplained weight loss, a cancer history, long-term steroid use, parenteral drug abuse, and intense localized pain and an inability to get into a comfortable position. Treatment usually consists of nonsteroidal anti-inflammatory agents or acetaminophen and a gradual return to