



# Subacute and chronic low back pain: Nonpharmacologic and pharmacologic treatment

**Author:** Roger Chou, MD

**Section Editor:** Steven J Atlas, MD, MPH

**Deputy Editor:** Lisa Kunins, MD

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## INTRODUCTION

It is estimated that up to 84 percent of all adults have low back pain at some time in their lives, and it is one of the more common reasons for a primary care visit [1,2]. Rapid improvement in pain and disability and return to work are the norm within the first month [3]. While the long-term outcome of low back pain is generally favorable and episodes are self-limited for most people, symptoms may persist beyond 12 weeks for some, and even among those no longer seeking care [4].

The nonpharmacologic and pharmacologic management of subacute and chronic low back pain is presented in this topic. The treatment of acute low back pain and the evaluation, interventional management, and surgical treatment of low back pain are discussed separately. (See "[Treatment of acute low back pain](#)" and "[Evaluation of low back pain in adults](#)" and "[Subacute and chronic low back pain: Nonsurgical interventional treatment](#)" and "[Subacute and chronic low back pain: Surgical treatment](#)".)

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## DEFINITIONS

Patients with low back pain are categorized into three groups according to the duration of symptoms:

- Acute low back pain – Pain lasting up to 4 weeks
- Subacute low back pain – Pain lasting between 4 to 12 weeks
- Chronic low back pain – Pain lasting greater than 12 weeks

A glossary of terms used in the discussion of low back pain is presented in the table ( [table 1](#)). Criteria used in this review to classify the magnitude of benefits for the most commonly reported outcomes (pain relief or improvement in function) are presented in the table ( [table 2](#)).

## SELF-CARE ADVICE AND EXERCISE FOR ALL PATIENTS

All patients with subacute or chronic low back pain should receive self-care advice and be encouraged to participate in some sort of exercise or movement-based program (supervised or independent). (See '[Self-care advice](#)' below and '[Exercise therapy](#)' below.)

**Self-care advice** — Self-care advice for all patients with subacute or chronic low back pain includes all of the following:

- **Maintain activity as tolerated** – For all patients with subacute and chronic low back pain, regardless of duration or severity, initial advice should stress the importance of maintaining activity as tolerated [5]. Patients who require a period of bed rest due to severe symptoms should be encouraged to return to normal activities as soon as possible.

In a systematic review of trials in a mixed back pain population, advice to remain active (in addition to providing specific advice on the most appropriate exercise) was effective in reducing pain and work disability for patients with chronic low back pain [6].

- **Heat** – We advise the use of heat (heating pad on low setting for 20 minutes every two hours) followed by [gentle stretching](#) as tolerated for patients with subacute back pain and during flares in patients with chronic low back pain. We do not generally advise the use of ice or of cool packs, but if a patient finds symptomatic relief with their use, there is no contraindication.

In a systematic review of nine trials including 1100 patients with acute and subacute low back pain, the application of superficial heat was superior to no heat for short-term improvement in pain. There was insufficient evidence to determine the effects of cold packs [7].

There are no high-quality data on the use of superficial heat or cold in the treatment of chronic low back pain. If either provides symptomatic relief during a flare, however, they can be used for short periods of time.

- **Self-care education** – For all patients who are amenable, we provide written materials or refer them to [internet-based](#) educational resources for advice on [self-care](#), including stretching and graded activity.

Self-care education books based upon evidence-based guidelines (such as "[The Back Book](#)") are an effective and inexpensive method for supplementing clinician-provided back information and advice [8,9]. Several randomized trials have shown self-care education books to be similarly effective, or only slightly inferior, to interventions with higher direct costs, such as supervised exercise, massage, acupuncture, and spinal manipulation [10-13].

**Exercise therapy** — Exercise therapy is safe, readily available, helps alleviate pain symptoms, and improves function in patients with low back pain. There are a wide range of exercise and other movement-based therapies commonly used in patients with subacute and chronic low back pain, and most have similar efficacy. Such exercise programs include motor control exercise (also known as specific stabilization exercise), core strengthening (eg, abdominal and trunk extensor), flexion/extension movements, directional preference (eg,

McKenzie exercises), general physical fitness, aerobic exercise, Pilates, exercise programs with a mind-body component (eg, yoga and Tai Chi), and functional restoration programs.

Most exercise therapies appear to be similarly effective, and the decision on which type of exercise to recommend should be based upon practical considerations, including local availability, patient preferences and abilities, possible insurance coverage issues, and previous history of success (or lack of success) with a particular exercise program. (See "[Exercise-based therapy for low back pain](#)", section on '[Subacute and chronic low back pain: Exercise is beneficial](#)'.)

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## SUBACUTE LOW BACK PAIN: OUR APPROACH TO MANAGEMENT

For some patients, an episode of low back pain may last beyond four weeks. The period from 4 to 12 weeks represents a transition period, in which improvement in pain and function typically is less rapid than in the acute phase, and some patients may develop persistent (chronic) pain. In this period of subacute low back pain, the goals of treatment are to work towards resolution of symptoms if possible, to identify those at higher risk for developing chronic pain, and to intervene as early as possible in such patients. For those patients whose symptoms persist beyond three months, however, the goal of treatment moves from "curing" to controlling pain, maintaining function, maximizing coping, and preventing disability.

**Assessing risk for developing chronic low back pain** — The use of other treatments in addition to self-care advice and exercise therapies depends upon the patients' risk factors for the development of chronic pain and chronic low back pain-related disability.

There are known factors associated with development of chronic low back pain and low back pain-related disability, including preexisting psychological conditions, somatization, maladaptive pain coping behaviors (eg, fear avoidance or catastrophizing), high level of functional impairment, the presence of other types of chronic pain, job dissatisfaction or stress, and dispute over compensation issues [[14,15](#)]. Patients with these risk factors may benefit from different treatment approaches earlier in their presentation. A formal risk-stratified care approach may help clinicians determine which patients with low back pain are at risk for chronicity, and structured evaluation tools are available to assist in this evaluation [[14,16,17](#)].

One such approach, the [STarT Back](#) (Subgroups for Targeted Treatment) tool, has been developed to allow categorization of low back pain patients into those with a low, medium, and high risk of developing persistent, disabling back pain [[18](#)]. It has been validated as a predictive tool and, in a randomized trial in the United Kingdom, a risk-stratified approach using STarT Back was more effective than usual care in managing patients with low back pain of varying duration [[19](#)]. However, in a trial using the STarT Back approach in the United States, there was no improvement in patient outcomes [[20](#)]. These mixed results may reflect the challenges of implementing the STarT Back approach in different treatment settings.

By risk stratifying patients, clinicians may be able to refer those at higher risk for additional interventions earlier while avoiding overtreatment in patients who have a high likelihood of recovery (for whom advice on self-care interventions and exercise may be sufficient). (See '[Self-care advice](#)' above and '[Exercise therapy](#)' above and '[Psychological and mind-body therapies](#)' below.)

**Patients at lower risk for developing chronic low back pain** — For all patients with subacute low back pain who are at lower risk of developing chronic low back pain, we give self-care advice and recommend participation in an exercise program (supervised or independent). (See ['Self-care advice'](#) above and ['Exercise therapy'](#) above.)

**Patients at higher risk for developing chronic low back pain** — In all patients with subacute low back pain who are at higher risk for developing chronic low back pain, we provide self-care advice and recommend participation in an exercise program. Such patients may benefit from participation in a supervised (rather than independent) exercise program; the support offered by such a program may provide reassurance and ultimately allow the patient to progress to perform more independent exercise. (See ['Self-care advice'](#) above and ['Exercise therapy'](#) above.)

**Psychological and mind-body therapies** — In addition to self-care advice and exercise, all patients with subacute low back pain who are at higher risk of developing chronic pain should be referred for interventions that address psychosocial contributors to pain. Such therapies include cognitive behavioral therapy (CBT) or mind-body interventions including mindfulness-based stress reduction [MBSR], biofeedback, and progressive relaxation. These interventions can be prescribed individually, combined with supervised exercise programs, or coordinated through a multidisciplinary rehabilitation program. (See ['Cognitive behavioral therapy'](#) below and ['Mindfulness-based stress reduction'](#) below and ['Multidisciplinary rehabilitation for patients who need more intensive therapy'](#) below.)

However, access to some of these therapies may be limited by local availability, insurance coverage, patient out-of-pocket costs, and other factors.

**Adjunctive passive therapies for short-term management of symptoms** — In addition to providing self-care advice, referring for exercise therapies, and CBT or MBSR, we refer some patients with subacute low back pain (those with more severe symptoms and risk factors for chronicity including maladaptive behaviors and functional impairment) for short-term interventions such as spinal manipulation, acupuncture, or massage. These patients may benefit from "passive" treatments which may provide short-term symptomatic improvement, allowing them to participate in active therapies.

Many of the studies evaluating the use of these treatments were performed in either patients with chronic low back pain, or in mixed (combined subacute and chronic) back pain patient populations.

The choice among these interventions depends upon patient preference and cost, accessibility, and the availability of skilled providers, as there are no data demonstrating superiority of one over another [5].

**Spinal manipulation** — Spinal manipulation may have beneficial short-term benefits in the management of subacute and chronic low back pain. It is a form of manual therapy that involves the movement of a joint beyond its usual end range of motion, but not past its anatomic range of motion. Spinal manipulation is most commonly associated with chiropractic providers, but is also performed by other providers, including osteopathic clinicians and physical therapists. (See ["Spinal manipulation in the treatment of musculoskeletal pain"](#), section on ['Types of manipulation'](#).)

A 2011 meta-analysis including 26 randomized trials of 6000 patients with chronic low back pain compared spinal manipulation with multiple interventions including general practitioner care, analgesics, physical therapy,

exercises, back school, massage, ultrasound, transcutaneous muscle stimulation, and pain clinic care [21]. Spinal manipulation had small short-term effects on pain reduction and improved functional status compared with the other interventions. Subsequent randomized trials support these findings of short-term benefits of spinal manipulation in patients with subacute and chronic low back pain [21-25]. In a 2018 meta-analysis, the combination of spinal manipulation plus other active treatments produced a small benefit on pain and function at 12 months compared with other active treatments alone [26].

Serious adverse events following lumbar spinal manipulation (such as worsening lumbar disc herniation or cauda equina syndrome) are possible but rare. (See "[Spinal manipulation in the treatment of musculoskeletal pain](#)", [section on 'Risks of spinal manipulation'](#).)

**Acupuncture** — Studies of acupuncture for chronic low back pain, an intervention consisting of the insertion of needles at specific predetermined acupuncture points, have produced mixed results. Some well-blinded trials that evaluated the efficacy of acupuncture, including electroacupuncture, found little [27] or no [28,29] benefit from acupuncture compared with “sham” acupuncture.

In various systematic reviews that also included lower-quality trials, acupuncture moderately improved both short-term pain and function compared with no intervention and improved pain, but not function, compared with sham acupuncture [30-32].

It is unclear if the effectiveness of sham acupuncture derives from some attribute of the technique (eg, superficial needling in non-acupuncture points) or is solely a placebo effect. Acupuncture is likely to be most beneficial in patients who have high expectations of benefit [33]. (See "[Acupuncture](#)", [section on 'Low back pain'](#).)

**Massage** — There is limited evidence to support the long-term efficacy of massage therapy in the treatment of chronic low back pain, although interpretation and comparison of studies is hampered by differences in the comparator interventions, including types of massage, duration, and frequency of massage sessions.

A systematic review including 25 trials evaluated the effects of massage on patients with subacute and chronic low back pain [34]. Compared with patients receiving no other treatment, those receiving massage therapy had only short-term improvement in pain and function.

However, harms from massage treatment appear to be minimal, and some patients report symptomatic relief with massage. Thus, we feel it is a reasonable adjunctive short-term pain management option for those patients who are interested in pursuing massage treatment.

**Pharmacologic treatment for more severe pain symptoms** — In patients with subacute low back pain with more severe pain symptoms, we use pharmacologic therapy for additional symptom management. Although nonpharmacologic therapy is generally preferred over pharmacologic therapy, they are commonly used together in clinical practice. The goal of medications is to provide symptomatic relief of pain symptoms while allowing the patient to participate in active therapies, including exercise, psychological, and/or mind-body interventions.

We typically use a short course of medication for adjunctive symptom management, as the data only support evidence of benefit in short-term use.

**NSAIDs** — For patients with subacute low back pain, we recommend using a nonsteroidal antiinflammatory drug (NSAID) as first-line therapy. Examples include:

- [Ibuprofen](#) 400 mg to 800 mg orally every eight hours as needed
- [Naproxen](#) 250 to 500 mg orally every 12 hours as needed

Patients should be encouraged to take the lowest effective dose of an NSAID for the shortest period of time. High-quality data are limited on optimal NSAID dosing strategies for the management of subacute low back pain, but one reasonable approach is to have the patient take a standing dose for one to two weeks, then decrease the dose and dosing frequency as tolerated.

Systematic reviews of randomized trials found that, compared with placebo, NSAIDs are slightly more effective for both pain relief and improvement in function in mixed back pain (acute and chronic) populations [[35,36](#)]. Evidence for the efficacy of NSAIDs in the management of subacute low back pain is sparse, but the benefits likely extend to those with subacute symptoms.

NSAIDs are associated with well-known gastrointestinal and renal side effects. In addition, exposure to NSAIDs is associated with an increased risk of myocardial infarction, which may be related to the degree of cyclooxygenase (COX)-2 inhibition [[37](#)]. Cardiovascular and gastrointestinal risk factors should be assessed before prescribing NSAIDs. (See "[Nonselective NSAIDs: Overview of adverse effects](#)".)

**Patients with contraindications to NSAIDs** — For patients who are unable to take NSAIDs (ie, due to allergy or other intolerance, chronic kidney disease, hypertension, peptic ulcer disease, or with cardiovascular disease), [acetaminophen](#) is a reasonable alternative. We use acetaminophen 650 mg orally every six hours as needed (maximum 3 grams per 24 hours) for most adults, although we would use a lower total daily dose for older adult patients and those with any hepatic impairment. We do not combine acetaminophen with NSAIDs.

Evidence supporting the use of [acetaminophen](#) for chronic low back pain is mostly indirect. In systematic reviews of patients with multi-site osteoarthritis (not limited to the back), acetaminophen was more effective than placebo, but was consistently inferior to NSAIDs for pain relief [[38-41](#)].

[Acetaminophen](#) overdose can lead to severe hepatotoxicity and is the most common cause of acute liver failure in the United States [[42](#)]. Other possible adverse effects that have been associated with acetaminophen include chronic kidney disease, hypertension, and peptic ulcer disease. Patients should be made aware of the safe total daily dose of acetaminophen, and to consider all sources of acetaminophen in both prescription and over-the-counter medications. (See "[Acetaminophen \(paracetamol\) poisoning in adults: Pathophysiology, presentation, and evaluation](#)" and "[Epidemiology and pathogenesis of analgesic-related chronic kidney disease](#)", section on '[Acetaminophen](#)' and "[NSAIDs and acetaminophen: Effects on blood pressure and hypertension](#)", section on '[Effects of acetaminophen on blood pressure](#)' and "[Unusual causes of peptic ulcer disease](#)", section on '[Non-NSAID medications](#)'.)

**If NSAID or acetaminophen therapy is inadequate** — As second-line therapy for patients with subacute low back pain, we suggest the addition of a non-benzodiazepine skeletal muscle relaxant, as needed, for symptoms not well managed with NSAIDs or [acetaminophen](#) alone. Examples include:



- [Cyclobenzaprine](#) 5 to 10 mg orally three times daily as needed (with one of the doses take at bedtime to help with sleep).
- [Tizanidine](#) 4 to 8 mg orally three times daily as needed.

When a skeletal muscle relaxant is needed, we use the lowest effective dose and dosing frequency. We may start with a standing dose for the first one to two weeks of treatment and then decrease the dose and dosing frequency as tolerated. Patients who may be more sensitive to the sedating effects (eg, older patients, and those with organ impairment or those receiving potentially interacting medications) may better tolerate a reduced starting dose, less frequent administration, and a more gradual titration. All patients should be advised of their potential to cause drowsiness.

High-quality data on the use of skeletal muscle relaxants in patients with subacute low back pain is lacking, and the recommendation to use them in this patient population is based upon the efficacy of these medications in patients with acute low back pain [[35,43](#)].

In a systematic review, skeletal muscle relaxants were better than placebo for short-term improvement in pain in patients with acute low back pain, but there was insufficient evidence to determine whether they were effective for subacute or chronic low back pain [[43](#)]. These medicines were associated with more sedation compared with placebo.

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## CHRONIC LOW BACK PAIN: OUR APPROACH TO MANAGEMENT

All patients with chronic low back pain (pain that persists beyond 12 weeks) should receive self-care advice and participate in exercise or movement-based therapy. (See '[Self-care advice](#)' above and '[Exercise therapy](#)' above.)

**Patients without disabling symptoms or functional impairment** — Many patients with chronic low back pain may not have disabling symptoms or significant functional impairment. For these patients, education on the importance of participation in a regular exercise program is essential. Patients who are motivated will likely do well with an independent exercise program, while others may benefit from participation in a more structured or supervised program.

For patients with a history of recurrent low back pain, participation in a regular exercise therapy program may help prevent future exacerbations of low back pain [[44](#)].

**Patients with disabling pain and significant functional impairment** — Those patients with chronic low back pain and more severe, persistent, disabling symptoms and significant functional impairment require more intensive management strategies. For such patients, the goal of care is to manage pain, increase function, and maximize coping skills. Utilizing a combination of exercise therapies, psychological and/or mind-body interventions, pharmacologic therapy, and other treatments is often required to achieve this goal.

Such patients may benefit from participation in a supervised (rather than independent) exercise program; the support offered by such a program may provide structure and reassurance and ultimately allow the patient to progress to performing more independent exercise.

Maintaining an emphasis on active therapy is consistent with a biopsychosocial approach to pain, which engages patients in their care, more directly aiming to improve function, not just reducing pain. Movement-based interventions with a mind-body component, including Tai-chi and yoga, are particularly well suited for patients with low back pain and functional limitations.

Exercise and movement-based therapies can be combined with cognitive behavioral therapy (CBT) and mind-body interventions (mindfulness-based stress reduction [MBSR], biofeedback, and progressive relaxation).

CBT and mind-body therapy treatment options are not widely available to all patients, and not all patients are amenable to participating in these therapies. Patient expectations of benefit from a treatment should be taken into consideration when choosing interventions, as they appear to influence outcomes. Other factors to consider when choosing among available therapies include prior response to treatments, cost, convenience, and local availability of skilled providers for specific therapies [45-47].

**Psychological and mind-body therapies** — We refer some patients for interventions that address psychosocial contributors to pain, including CBT or mind-body interventions, including MBSR, biofeedback, and progressive relaxation. Such patients include those with significant functional impairment and who exhibit either maladaptive coping behaviors (fear avoidance, catastrophizing) or who cannot participate in exercise.

**Cognitive behavioral therapy** — We use CBT as a primary adjunctive therapy in patients with higher-risk subacute low back pain and chronic low back pain causing significant functional impairment. CBT is a goal-oriented, problem-solving psychotherapeutic approach where negative thinking patterns and coping behaviors are addressed, and it is widely used in the management of a variety of chronic pain syndromes. (See "[Approach to the management of chronic non-cancer pain in adults](#)", section on 'Cognitive-behavioral therapy'.)

CBT improves both pain and disability in patients with low back pain. In a systematic review and meta-analysis including 23 studies and 3,300 patients with subacute and chronic low back pain, CBT was superior to waitlist control, usual care, and guideline-based active treatment for improvement in both short- and long-term pain and a reduction in disability [48].

**Mindfulness-based stress reduction** — MBSR is a mind-body relaxation technique designed to enhance a person's ability to relax, cope with stress, and help manage pain. We also refer to MBSR programs, where available, as adjunctive treatment for higher-risk patients with disabling chronic low back pain. (See "[Approach to the management of chronic non-cancer pain in adults](#)", section on 'Patient pain neuroscience education'.)

In a meta-analysis of seven randomized controlled trials involving 864 patients with low back pain, MBSR modestly improved pain intensity and physical functioning compared with usual care [49]. In one of the included studies in which 340 adults with chronic low back pain were randomly assigned to receive either MBSR, CBT, or usual care, MBSR was found to be similar to CBT in reduction in pain and disability at 26 and 52 weeks [50].

**Multidisciplinary rehabilitation for patients who need more intensive therapy** — For patients with chronic low back pain and significant functional impairment in whom CBT or MBSR is inadequate in managing pain and improving function, we refer to a multidisciplinary rehabilitation program if available. Insurance coverage for multidisciplinary rehabilitation programs is variable, however, and we usually only refer patients to these programs if non-multidisciplinary rehabilitation therapies have been unsuccessful.



Multidisciplinary, or interdisciplinary, rehabilitation combines (at a minimum) an exercise and a behavioral intervention component, provided by different health care professionals, and can be effective in the management of patients with higher-risk subacute low back pain and significant chronic low back pain. Intensity and content of interdisciplinary therapy vary widely, but the programs generally combine graded exercise therapy with a psychosocial approach, often involving a psychologist.

Multidisciplinary rehabilitation programs are usually coordinated by pain clinics or rehabilitation centers and may not be widely available in many communities. It is uncertain whether providing the components of multidisciplinary rehabilitation outside of a formal program is as effective as administering them through a coordinated program.

Multidisciplinary therapy focuses on functional improvement (“functional restoration”) and may emphasize occupational aspects of rehabilitation. (See ["Exercise-based therapy for low back pain", section on 'Choice of exercise: All programs are beneficial'.](#))

Patients are more likely to benefit from multidisciplinary rehabilitation if they are highly motivated, as the regimens can be time consuming (eg, >20 hours per week). We advise referring clinicians be familiar with outcomes for specific programs, given the cost and heterogeneity of quality among programs [51].

In a systematic review of 41 trials, multidisciplinary rehabilitation that combined a physical component with a psychological component and/or a social/work-targeted component was associated with slightly larger improvements in pain and function than usual care or non-multidisciplinary physical treatments (eg, exercise therapy, physical modalities, manual therapy, education) [52]. Differences were about 0.5 points on a 0 to 10 point pain scale and 1.5 points on the Roland Morris functional scale (both considered small differences) ( [table 2](#)). Multidisciplinary treatment also increased the likelihood of return to work compared with non-multidisciplinary physical treatments alone (odds ratio [OR] 1.87, 95% CI 1.39-2.53). There was no clear effect of intervention intensity (frequency and duration of therapies) on effectiveness of multidisciplinary rehabilitation.

**Adjunctive pharmacologic therapy for patients with persistent, significant symptoms** — Although nonpharmacologic therapy is preferred over pharmacologic therapy for the management of chronic low back pain, they are commonly used together in clinical practice. The goal of medications is to provide symptomatic relief of pain while allowing the patient to participate in active therapies (exercise and/or psychological treatments), encouraging increased function and improved coping.

In patients with persistent, disabling chronic low back pain and functional impairment, we often use pharmacologic therapy as adjunctive treatment concurrently with exercise and psychological therapies or mind-body interventions.

For patients with significant chronic low back pain who need adjunctive medication for symptom management, the supporting data on the duration of medication treatment are limited. Thus, limiting the duration of use for most medications is ideal but not always possible.

**First-line pharmacologic therapy** — The majority of patients with chronic low back pain will have already tried nonsteroidal antiinflammatory drug (NSAID) therapy (either of their own initiative or upon prior clinician recommendation/prescription) during the acute or subacute phase. In these patients [53]:

- If NSAIDs are effective in controlling symptoms, we continue them without adding additional pharmacologic therapy. We use the lowest effective dose and frequency, favoring an "as needed" over a "standing" dosing schedule, and attempt to taper and ultimately discontinue these drugs if possible. NSAIDs are associated with side effects (eg, gastrointestinal, renal, and cardiovascular), and risk factors for complications should be assessed before recommending. (See ["Nonselective NSAIDs: Overview of adverse effects"](#).)
- If NSAIDs are only partially effective in controlling symptoms, and additional pain control is required, we continue NSAIDs but add second-line pharmacologic therapy. (See ["Second-line pharmacologic therapy"](#) below.)
- We do not use NSAIDs for chronic therapy if they were ineffective in managing subacute low back pain symptoms.

Dosing of NSAIDs is discussed above. (See ["NSAIDs"](#) above.)

For patients who are unable to take NSAIDs (ie, due to allergy or other intolerance, chronic kidney disease, hypertension, peptic ulcer disease, or cardiovascular disease), [acetaminophen](#) is a reasonable alternative. (See ["Patients with contraindications to NSAIDs"](#) above.)

**Second-line pharmacologic therapy** — For patients with chronic low back pain in whom NSAID therapy is ineffective or inadequate and who require long-term pharmacologic therapy, [duloxetine](#) and [tramadol](#) are commonly used [53]. We prefer duloxetine, a selective serotonin-norepinephrine reuptake inhibitor (SNRI), over tramadol. Tramadol, a drug with mixed opiate agonist and SNRI activity, carries the potential for misuse and dependency.

Some experts at UpToDate use tricyclic antidepressants as an alternative to [duloxetine](#), especially for those patients with pain symptoms that interfere with sleep, or for those in whom duloxetine is ineffective or cost-prohibitive.

- [Duloxetine](#) – Duloxetine is started at 30 mg orally once daily, and after one week is increased to 60 mg orally once daily if tolerated. Duloxetine needs to be taken every day, not on an "as-needed" basis like many of the other medications discussed here.

In a 2021 meta-analysis including four randomized trials and over 1400 patients with chronic low back pain, [duloxetine](#) was more effective than placebo in reducing pain and disability at three months [54]. The degree of improvement in both measures was small and of uncertain clinical importance. However, the estimated benefits are similar to other treatments for chronic back pain, including first-line medications such as NSAIDs. Patients were more likely to discontinue duloxetine compared with placebo due to adverse effects.

[Duloxetine](#) was approved by the US Food and Drug Administration (FDA) in 2012 for treatment of chronic musculoskeletal pain, including low back pain.

[Duloxetine](#) is preferred over [tramadol](#) in patients for whom there is a concern over the possibility of drug abuse or misuse.

Depression is common in patients with chronic low back pain, and as an antidepressant, [duloxetine](#) may have an additional indication for use in a patient with chronic low back pain and coexisting depression [55]. However, the analgesic effects of duloxetine are independent of whether or not depression is present. (See "[Unipolar major depression in adults: Choosing initial treatment](#)", section on 'Antidepressant pharmacotherapy'.)

- [Tramadol](#) – Tramadol can be taken either as a standing dose or on an "as-needed" basis. For instance, when therapy is initiated, we prescribe it to be taken "as-needed," and the dosing schedule subsequently adjusted according to the patient's response. We typically start at the lowest dose, particularly in older adults and opioid-naïve patients (eg, tramadol 25 to 50 mg orally every six or eight hours as needed), then increase the dose if necessary (eg, tramadol 50 to 100 mg orally every six hours as needed).

If a patient has constant symptoms, however, it can be prescribed to be taken on a standing schedule (eg, [tramadol](#) 50 mg orally every six hours); the frequency is then decreased or changed to an "as-needed" dosing schedule as symptoms improve.

We never use a long-acting [tramadol](#) preparation when initiating tramadol therapy because it complicates dose titration. In patients already on a stable, standing dosing schedule of short-acting tramadol, a long-acting tramadol preparation may be more convenient, but we do not routinely use it because it is generally more costly and not associated with improved pain relief or function.

[Tramadol](#), although a weak opioid agonist that may have a lower risk of constipation and dependence than conventional opioids, still has abuse potential, and should be prescribed with caution in patients with a history of substance use disorder [56,57]. There is also a risk of serotonin syndrome, especially when combined with other serotonergic agents [58]. Tramadol lowers the seizure threshold.

- **Tricyclic antidepressants** – Tricyclic antidepressants are used to treat various other chronic pain syndromes and had previously been recommended for the treatment of low back pain, but their small and inconsistent benefits in studies of back pain may not outweigh their known side effects (most commonly drowsiness, dry mouth, and dizziness).

Adverse effects of the tricyclics may limit the tolerability of these medications, particularly at higher doses, and they should be used with caution in older patients. Examples of tricyclic antidepressants used in the management of chronic low back pain include:

- [Amitriptyline](#) 25 to 75 mg orally once daily at bedtime
- [Nortriptyline](#) 25 to 75 mg orally once daily at bedtime
- [Desipramine](#) 50 to 150 mg orally once daily at bedtime

In a 2021 meta-analysis including seven trials and almost 600 patients with chronic low back pain, tricyclic antidepressants were associated with benefits at three months similar to those observed with other medications, but the estimate was imprecise and not statistically significant [54].

**Pharmacologic therapy for persistent symptoms** — The contributors to this topic have somewhat different approaches to patients with disabling chronic low back pain that persists despite the use of

nonpharmacologic and first- and second-line pharmacologic options. One contributor would use a skeletal muscle relaxant ([cyclobenzaprine](#) or [tizanidine](#)) as long-term adjunctive pharmacotherapy with [duloxetine](#) in patients with persistent, disabling symptoms. The contributors to this topic would initiate opioid therapy in selected patients who have persistent, disabling symptoms despite all other therapeutic attempts.

Short-term use of skeletal muscle relaxants are used as adjunctive therapy in patients with acute exacerbations of chronic low back pain [43], but they have not been evaluated for long-term use. However, there are some patients for whom the addition of a skeletal muscle relaxant may be a better option than [tramadol](#), such as those patients that are at risk for opioid misuse or those in whom pain interferes with sleep and who might benefit from the sedating effects of these medications. (See '[Management of acute flares in patients with chronic low back pain](#)' below.)

If a skeletal muscle relaxant is used, [cyclobenzaprine](#) or [tizanidine](#) are preferred because their mechanism of action is understood, they have undergone more rigorous studies than other skeletal muscle relaxants, and they don't have the abuse potential associated with certain skeletal muscle relaxants (eg, [carisoprodol](#)). These can be prescribed as a standing dose during the daytime or only at bedtime. Dosing is discussed elsewhere. (See '[If NSAID or acetaminophen therapy is inadequate](#)' above.)

Opioids should **not** be used routinely for the management of chronic low back pain given poor or modest efficacy and the potential for harm [59,60]. Opioid use should be restricted to patients not highly vulnerable to drug dependence, misuse, or addiction and only when the potential benefits outweigh the risks; in addition, the lowest possible dose should be used and use should be monitored closely [53,61]. (See "[Use of opioids in the management of chronic non-cancer pain](#)", [section on 'Evaluation of risk prior to initiating therapy'](#) and "[Use of opioids in the management of chronic non-cancer pain](#)", [section on 'Follow-up and monitoring during chronic opioid therapy'](#).)

Systematic reviews and meta-analyses of opioid use in patients with chronic low back pain identified few high-quality and no long-term trials [60,62-65]. In the available trials, opioids produced only small, short-term improvements in pain and function when compared with placebo and had no benefit compared with NSAIDs or antidepressants. A long-term randomized trial compared stepped therapy with opioids versus nonopioid medications in 240 Veterans Affairs patients with moderate to severe chronic back pain or hip or knee osteoarthritis [65]. At one year, there was no difference in pain-related function, while pain intensity was slightly better in nonopioid-treated patients. In addition, patients treated with opioids experienced more negative side effects. It should be noted that in patients assigned to stepped therapy with nonopioid medications, opioids were permitted at later steps, but the doses were very low.

Studies of the use of opioids for chronic and subacute low back pain rarely quantify the risk of important harms, such as abuse or addiction, and have typically excluded patients at higher risk for these types of adverse events. In one systematic review, aberrant drug-taking behaviors were found in up to 24 percent of patients receiving opioids for low back pain, but most studies had important methodologic shortcomings, including poorly described or validated methods for identifying such behaviors [62].

Opioid pain medications are frequently prescribed for chronic low back pain, which is inconsistent with evidence-based care. The percentage of patients with visits for low back symptoms who were prescribed opioid pain

medications in the United States increased between 2000 and 2010 (from 19 to 29 percent), while the percentage of those prescribed NSAIDs and [acetaminophen](#) declined (from 37 to 29 percent). The Back Pain Survey, using data collected between 2009 and 2010 from adults with self-reported chronic low back pain, revealed that almost 20 percent had used a prescription opioid pain medication within the past 30 days [[66,67](#)].

**Patients who are already on opioid therapy** — For patients who are already taking long-term opioid therapy for chronic low back pain, we attempt to lower the [morphine](#) milligram equivalent (MME) dose by maximizing nonpharmacologic therapies and utilizing first-line pharmacotherapy. (See "[Use of opioids in the management of chronic non-cancer pain](#)", [section on 'Choice of agent and dose'](#) and '[Psychological and mind-body therapies](#)' above and '[Adjunctive pharmacologic therapy for patients with persistent, significant symptoms](#)' above.)

If the patient is able to achieve adequate symptom control, we may attempt to discontinue the opioid entirely, although this is not always possible. (See "[Use of opioids in the management of chronic non-cancer pain](#)", [section on 'Discontinuing therapy'](#).)

**Management of acute flares in patients with chronic low back pain** — When flares of low back pain occur in patients with chronic low back pain, we manage these episodes as we do subacute low back pain. For all patients, we:

- Reinforce self-care advice (see '[Self-care advice](#)' above)
- Use short-term pharmacologic therapy as needed (see '[Pharmacologic treatment for more severe pain symptoms](#)' above)
- Refer (or "re-refer") to psychological or mind-body therapy (CBT or MBSR) (see '[Psychological and mind-body therapies](#)' above)
- Refer for short-term use of passive therapies, including acupuncture, spinal manipulation and/or massage treatment for if needed (see '[Adjunctive passive therapies for short-term management of symptoms](#)' above)

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## THERAPIES THAT WE DO NOT ROUTINELY RECOMMEND

There are a number of other interventions that have been used in the treatment of subacute and chronic low back pain, including a variety of pharmacologic interventions and educational approaches as well as different physical treatment modalities. We do not typically use or refer for these treatments in our practice.

**Pharmacologic therapies** — We do not routinely use the pharmacologic therapies discussed below in the treatment of patients with subacute and chronic low back pain because of limited evidence and alternative treatment options with better efficacy and tolerability are available.

- **Other antidepressants** – Other than [duloxetine](#), the role of antidepressants for the treatment of chronic back pain is uncertain.

Meta-analyses that compared non-serotonin-norepinephrine reuptake inhibitor (SNRI) antidepressants with placebo for short-term therapy (eight weeks or less) in patients with nonspecific back pain demonstrated conflicting results, and longer-term trials are not available [68-70]. Antidepressants were slightly more effective than placebo for low back pain in two meta-analyses, with an estimated standard mean difference [MD] of 0.41 (95% CI 0.22-0.61) for pain relief but no difference for activities of daily living [68,69]. Tricyclic antidepressants, but not selective serotonin reuptake inhibitors (SSRIs) or [trazodone](#), were associated with this improvement. A subsequent meta-analysis found no difference between antidepressants (primarily tricyclic antidepressants) and placebo treatment for relief of pain or depression, and no difference between types of antidepressants [70]. (See "[Pharmacologic management of chronic non-cancer pain in adults](#)", [section on 'Antidepressants'](#).)

- **Benzodiazepines** – Benzodiazepines have commonly been used as skeletal muscle relaxants but are not approved by the US Food and Drug Administration (FDA) for this indication, and the data on the effectiveness of benzodiazepines for the treatment of subacute or chronic low back pain are mixed. We do not routinely use benzodiazepines in the treatment of subacute or chronic low back pain; if needed, the non-benzodiazepine skeletal muscle relaxants are preferred to treat symptomatic muscle spasm. (See "[Management of acute flares in patients with chronic low back pain](#)" above.)

Additionally, due to the potential for dependency and abuse, benzodiazepines should not be used for the long-term treatment of chronic low back pain. (See "[Benzodiazepine use disorder](#)".)

A systematic review identified three trials of benzodiazepines for the treatment of low back pain, with two evaluating tetrazepam, a benzodiazepine not available in the United States. Tetrazepam reduced pain intensity (pooled relative risk [RR] 0.71, 95% CI 0.54-0.93) and overall symptom improvement (pooled RR 0.63, 95% CI 0.42-0.97) compared with placebo at 10 to 14 days. The third trial did not evaluate pain but found that [diazepam](#) was not better than placebo for muscle spasm [43,71].

The combination of benzodiazepines and opioids should be avoided, as this combination is associated with a marked increase in risk of overdose compared with an opioid alone [72,73]. (See "[Acute opioid intoxication in adults](#)" and "[Benzodiazepine poisoning and withdrawal](#)".)

- **Antiepileptics** – Antiepileptics are widely used in the treatment of various pain syndromes, including neuropathic pain, but evidence supporting the efficacy of these medications (ie, the gabapentinoids and [topiramate](#)) for the treatment of patients with subacute or chronic low back pain (with or without sciatica) is limited, with mixed results. In addition, there are frequent negative side effects reported with these medications, limiting overall patient tolerability. (See "[Pharmacologic management of chronic non-cancer pain in adults](#)", [section on 'Antiepileptic drugs'](#).)
  - **Gabapentinoids** – A 2017 meta-analysis of eight randomized control trials evaluated gabapentinoids ([gabapentin](#) or [pregabalin](#)) for the treatment of chronic low back pain [74]. Gabapentin did not improve pain compared with placebo, pregabalin was slightly less effective than other analgesics ([amitriptyline](#), [celecoxib](#), or [tramadol/acetaminophen](#)), and pregabalin used as adjuvant therapy (added to other medications) did not show a benefit. Gabapentin resulted in an increased risk of side effects, including dizziness, fatigue, difficulties with mentation, and visual disturbances.



For patients with chronic radiculopathy, [pregabalin](#) and [gabapentin](#) have only small or unclear effects on pain, with significant side effects [75-77].

- [Topiramate](#) – In one randomized trial of 96 patients with nonradicular chronic low back pain, topiramate moderately improved pain and slightly improved function compared with placebo after 10 weeks [78]. In another small trial, topiramate modestly improved pain compared with [diphenhydramine](#) in patients with chronic radiculopathy; however, it caused frequent side effects, and many patients dropped out of the trial [79].
- **Systemic corticosteroids** – No trial has evaluated systemic corticosteroids for the treatment of subacute or chronic nonradicular low back pain. However, extrapolating from trials of acute low back pain in which these agents did not improve pain or function [80,81], we do not treat patients with subacute or chronic low back pain with corticosteroids. (See "[Treatment of acute low back pain](#)", [section on 'Other medications'](#) and "[Acute lumbosacral radiculopathy: Treatment and prognosis](#)", [section on 'Systemic glucocorticoids'](#).)
- **Glucosamine** – Glucosamine is widely used to treat osteoarthritis, particularly of the knee and hip. However, there are few data to support its use for low back pain. In a six-month randomized trial of 250 patients with chronic low back pain and degenerative lumbar osteoarthritis, there were no differences in pain or quality-of-life scores between the glucosamine sulfate (1500 mg daily) and placebo groups [82]. The use of glucosamine for the treatment of knee osteoarthritis is discussed elsewhere. (See "[Management of knee osteoarthritis](#)", [section on 'Nutritional supplements'](#).)
- **Herbal preparations** – The role of herbal medications in the management of low back pain is uncertain. A 2014 systematic review evaluated randomized trials of a variety of herbal therapies in patients with acute, subacute, and chronic low back pain. Compared with placebo, evidence for efficacy was the best for topical *Capsicum frutescens* (cayenne), with oral *Harpagophytum procumbens* (Devil's claw), oral *Salix alba* (white willow bark), topical *Symphytum officinale* (comfrey root extract), and topical lavender essential oil also having efficacy [83]. However, there were methodologic limitations with the trials, the outcomes assessed were short-term, and the treatments were not compared with medications such as nonsteroidal antiinflammatory drugs (NSAIDs) or [acetaminophen](#). Additionally, herbal medications may potentially interact with other drugs or contain impurities, and some may have significant adverse effects. Patients should be asked about what nonprescription and herbal medications they are taking for their pain, and this information should be recorded in the medical record. Use and effects of herbal medicines are discussed in more detail separately. (See "[Overview of herbal medicine and dietary supplements](#)", [section on 'Purity and Adulteration'](#) and "[Overview of herbal medicine and dietary supplements](#)", [section on 'Safety'](#).)
- **Cannabis and cannabinoids** – High-quality data on the efficacy of cannabis and cannabinoids in the treatment of low back pain is lacking. The use of these agents in the management in chronic non-cancer pain is discussed elsewhere. (See "[Pharmacologic management of chronic non-cancer pain in adults](#)".)

**Intensive education** — Intensive education may be beneficial in subacute low back pain. However, data are lacking to support the efficacy of intensive education as a sole intervention in the management of chronic low back pain, rather than as an adjunct to other approaches such as exercise. In a systematic review of educational interventions, patients with subacute low back pain who received an intensive, in-person education session

lasting at least two hours had better outcomes, with improved pain, function, and a quicker return to work than those receiving the usual care [84]. However, those with chronic back pain benefited less from this intervention.

Pain neurophysiology education is a particular type of pain education that focuses upon the neurophysiology and psychosocial contributors of pain, rather than on the biomechanical aspects of pain. In a meta-analysis including seven randomized controlled trials and 313 patients with chronic low back pain, patients had moderate improvement in pain immediately following the intervention, with smaller improvements in pain and disability at three months [85]. In another small trial of patients with chronic low back pain, the combination of pain neurophysiology education and exercise improved short-term pain intensity and function compared with exercise therapy alone [86].

**Back school** — Back school is an intervention originally developed in Sweden consisting of education and a skill program including exercise therapy. Generally, lessons are provided to groups of patients and supervised by a physical therapist or other therapist trained in back rehabilitation, although the content of back school interventions vary and back school based on the traditional Swedish approach is not widely available in the United States. There is overlap between back school and group exercise, educational interventions, and multidisciplinary rehabilitation. Back school may be a reasonable therapeutic option in patients with subacute or chronic low back pain who are interested in it, but there is limited evidence supporting its effectiveness.

There is low-quality evidence that back school was modestly more effective than no treatment for short-term pain control, but these effects were not seen in intermediate- or long-term follow-up [87]. In addition, back school was no more effective for pain control than medical care, passive physiotherapy, or exercise in intermediate- or long-term follow-up.

**Use of lumbar supports** — The benefit of lumbar supports for patients with chronic low back pain is uncertain [88].

In an open-label randomized trial, use of an elastic belt in patients with subacute low back pain modestly reduced the need for pain medication and improved functional status at 30 and 90 days [89]. However, longer-term outcomes are unknown, and some have raised concerns that use of a lumbar support device might lead to activity restriction by reinforcing awareness of a "back problem," thereby discouraging exercise participation. Thus, while lumbar supports are not routinely recommended, they may provide some benefit for patients with subacute low back pain who are actively engaged in recommended therapies and who will remain active.

**Firm mattress/Sleeping surface** — High-quality data to determine an optimal sleeping surface firmness for patients with subacute and chronic low back pain are lacking. Two small trials in patients with low back pain suggested that softer or back-conforming mattresses led to improved outcomes (decreased pain and improved function) compared with firmer mattresses [90,91].

**Other physical modalities** — A large number of physical modalities, in addition to the physical treatments already discussed, are used in patients with chronic low back pain. For most of these modalities, there is little evidence of benefit from randomized, controlled studies, although patient expectations of benefit and placebo effects may play a role in their therapeutic value [33,92].

- **Interferential therapy** – Interferential therapy is the superficial application of a medium-frequency alternating current, modulated to produce low frequencies up to 150 Hz. There is no convincing evidence from three trials that interferential therapy is effective for chronic low back pain [[93-95](#)].
- **Low-level laser therapy** – Low-level laser therapy, used by some physical therapists, is provided as a single wavelength of light, between 632 and 904 nm, directed at the area of discomfort. Trials using low-level laser light therapy have yielded inconsistent results.

For chronic low back pain or back pain of unspecified duration, four trials found laser therapy superior to sham therapy for pain relief and improvement in function up to one year following treatment [[96-99](#)]. However, two other trials failed to show a benefit of laser therapy when used either alone or with exercise [[100,101](#)].

In a systematic review, low-level laser therapy improved low back pain but not disability compared with sham therapy [[102](#)]. However, there were variable protocols with different treatment doses, duration, and wavelengths used, and the review concluded that the data were insufficient to draw conclusions regarding efficacy.

- **Ultrasound** – Despite being widely used for the treatment of many musculoskeletal pain syndromes, few studies have demonstrated ultrasound therapy to be effective for the treatment of chronic low back pain [[103-105](#)]. Ultrasound is usually performed in combination with other physical therapy modalities, and its beneficial effect is thought to be due to the heating of deep tissues.

In two small trials of 10 and 36 patients with chronic low back pain, there were inconsistent results for ultrasound versus sham ultrasound; the smaller trial demonstrated a small improvement in patient function with ultrasound treatment, and the larger trial reported no differences [[5,103,106](#)]. A systematic review concluded that ultrasound is ineffective in the treatment of chronic low back pain [[104](#)].

- **Shortwave diathermy** – Shortwave diathermy is the elevation of the temperature of deep tissues by application of shortwave electromagnetic radiation with a frequency range from 10 to 100 MHz. Two trials found no differences between shortwave diathermy and sham diathermy manipulation for chronic low back pain [[107,108](#)].

- **Traction** – Traction involves pulling in order to stretch the lumbar spine. A variety of methods are used and typically involve a harness around the lower rib cage and around the iliac crest, the pulling action performed via free weights and a pulley, motorized equipment, inversion techniques, or an overhead harness.

In a systematic review including nine trials of patients with mixed-duration low back pain (with or without sciatica), there was inconclusive evidence that continuous or intermittent traction was more effective than placebo, sham, or no treatment [[109](#)]. Although autotraction (patient controlled traction) was more effective than placebo, sham, or no treatment in patients with sciatica, it was only evaluated in two trials with methodologic shortcomings.

- **Transcutaneous electrical nerve stimulation** – Transcutaneous electrical nerve stimulation (TENS) refers to the use of a small battery-operated device to provide continuous electrical impulses via surface electrodes,

with the goal of providing symptomatic relief by modifying pain perception. In a meta-analysis of nine trials comparing TENS with sham TENS, placebo, or pharmacologic therapy, there was no improvement in lower back pain scores [[110](#)].

- **Percutaneous electrical nerve stimulation** – Percutaneous electrical nerve stimulation (PENS) involves insertion of acupuncture-like needles into the soft tissue and applying low-level electrical stimulation. The insertion points target dermatomal levels for treatment rather than acupuncture points.

Although several trials found PENS moderately to substantially superior to sham PENS for pain relief, effects on function were inconsistent, all trials had methodologic shortcomings, and some trials only measured outcomes at the end of a two-week course of treatment [[111-114](#)]. PENS is not widely available in the United States.

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## SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "[Society guideline links: Lower spine disorders](#)".)

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## INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5<sup>th</sup> to 6<sup>th</sup> grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10<sup>th</sup> to 12<sup>th</sup> grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topic (see "[Patient education: Low back pain in adults \(The Basics\)](#)")
- Beyond the Basics topic (see "[Patient education: Low back pain in adults \(Beyond the Basics\)](#)")

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## SUMMARY AND RECOMMENDATIONS

- Most people have low back pain at some point in their lives. Rapid improvement in pain and disability and return to work are the norm within the first month. Subacute low back pain is commonly defined as back pain lasting between 4 to 12 weeks and chronic low back pain as pain that persists for 12 or more weeks. (See '[Introduction](#)' above and '[Definitions](#)' above.)

- All patients with subacute or chronic low back pain should receive self-care advice and be encouraged to participate in some sort of exercise program (supervised or independent). Initial advice should stress the importance of maintaining activity as tolerated; patients who require a period of bed rest due to severe symptoms should be encouraged to return to normal activities as soon as possible. (See ['Self-care advice and exercise for all patients'](#) above.)
- In all patients with subacute or chronic low back pain, we recommend participation in regular exercise rather than no exercise (**Grade 1B**). The evidence supporting this suggestion is presented elsewhere. (See ["Exercise-based therapy for low back pain"](#).)

Exercise therapy is safe, readily available, helps alleviate pain symptoms, and improves function in all patients with low back pain. Most exercise therapies appear to be similarly effective, and the decision on which type of exercise to recommend should be based upon practical considerations, including local availability, patient preferences and abilities, possible insurance coverage issues, and previous history of success (or lack of success) with a particular exercise program. (See ['Exercise therapy'](#) above.)

- The use of other treatments in addition to self-care advice and exercise therapies depends upon the patients' risk factors for the development of chronic pain and chronic low back pain-related disability. In all patients with subacute low back pain who are at higher risk for developing chronic low back pain, we suggest referral for interventions that address psychosocial contributors to pain (in addition to self-care advice and exercise) (**Grade 2B**). Such therapies include cognitive behavioral therapy (CBT) or mind-body interventions including mindfulness-based stress reduction [MBSR], biofeedback, and progressive relaxation. (See ['Patients at higher risk for developing chronic low back pain'](#) above.)
- In addition to providing self-care advice, referring for exercise therapies, and CBT or MBSR, we refer some patients with subacute low back pain (those with more severe symptoms, and risk factors for chronicity including maladaptive behaviors and functional impairment) for short-term interventions such as spinal manipulation, acupuncture, or massage. These patients may benefit from "passive" treatments which may provide short-term symptomatic improvement, allowing them to participate in active therapies. (See ['Adjunctive passive therapies for short-term management of symptoms'](#) above.)
- In patients with subacute low back pain with more severe pain symptoms, we add adjunctive pharmacologic therapy for additional symptom management. Although nonpharmacologic therapy is generally preferred over pharmacologic therapy, they are commonly used together in clinical practice. The goal of medications is to provide symptomatic relief of pain symptoms while allowing the patient to participate in active therapies, including exercise, psychological, and/or mind-body interventions.
  - In patients who require adjunctive pharmacologic therapy for the treatment of subacute low back pain, we suggest nonsteroidal antiinflammatory drugs (NSAIDs; or [acetaminophen](#) if an NSAID is not tolerated) rather than other analgesics or skeletal muscle relaxants as initial treatment (**Grade 2C**). (See ['NSAIDs'](#) above and ['Patients with contraindications to NSAIDs'](#) above.)
  - In patients who have an inadequate response to NSAIDs, we add skeletal muscle relaxants. (See ['If NSAID or acetaminophen therapy is inadequate'](#) above.)

- Many patients with chronic low back pain may not have disabling symptoms or significant functional impairment. For these patients, education on the importance of participation in a regular exercise program is essential. Those patients with chronic low back pain and more severe, persistent, disabling symptoms and significant functional impairment require more intensive management strategies. For such patients, the goal of care is to manage pain, increase function, and maximize coping skills. For patients with chronic low back pain and persistent, disabling symptoms and significant functional impairment, we suggest utilizing a combination of exercise therapies and psychological and/or mind-body interventions, rather than exercise alone (**Grade 2B**). (See ['Chronic low back pain: Our approach to management'](#) above.)
- Maintaining an emphasis on active therapy is consistent with a biopsychosocial approach to pain that engages patients in their care, more directly aiming to improve function, not just reduce pain. Movement-based interventions with a mind-body component, including Tai-chi and yoga, are particularly well suited for patients with low back pain and functional limitations. Exercise and movement-based therapies can be combined with CBT and mind-body interventions (MBSR, biofeedback, and progressive relaxation). (See ['Patients with disabling pain and significant functional impairment'](#) above.)
- Although nonpharmacologic therapy is preferred over pharmacologic therapy for the management of chronic low back pain, they are commonly used together in clinical practice. The goal of medications is to provide symptomatic relief of pain while allowing the patient to participate in active therapies (exercise and/or psychological treatments), encouraging increased function and improved coping. For patients with significant chronic low back pain who need adjunctive medication for symptom management, the supporting data on the duration of medication treatment is limited. Thus, limiting the duration of use for most medications is ideal, but not always possible.
  - In patients who require adjunctive pharmacologic therapy for the treatment of chronic low back pain, we suggest NSAIDs (or [acetaminophen](#) if an NSAID is not tolerated) as initial therapy (**Grade 2C**). (See ['First-line pharmacologic therapy'](#) above.)
  - In patients who have an inadequate response to NSAIDs, we use [duloxetine](#) (or a tricyclic antidepressant) and/or [tramadol](#) therapy. (See ['Second-line pharmacologic therapy'](#) above.)
  - Another option for those patients with persistent symptoms despite first- and second-line pharmacologic therapy is skeletal muscle relaxants. (See ['Pharmacologic therapy for persistent symptoms'](#) above.)
  - A last option for a limited group of patients with severe, persistent, disabling symptoms despite all other pharmacologic and nonpharmacologic treatments is opioids. (See ['Pharmacologic therapy for persistent symptoms'](#) above.)

Opioids should **not** be used routinely for the management of chronic low back pain given poor or modest efficacy and the potential for harm. Opioid use should be restricted to patients not highly vulnerable to drug dependence, misuse, or addiction and only when the potential benefits outweigh the risks; in addition, the lowest possible dose should be used and use should be monitored closely.

- For patients who are already taking long-term opioid therapy for chronic low back pain, we attempt to lower the [morphine](#) milligram equivalent (MME) dose by maximizing nonpharmacologic therapies and



utilizing first-line pharmacotherapy. If the patient is able to achieve adequate symptom control, we may attempt to discontinue the opioid entirely, although this is not always possible. (See '[Patients who are already on opioid therapy](#)' above.)

- When flares of low back pain occur in patients with chronic low back pain, we manage these episodes as we do subacute low back pain. (See '[Management of acute flares in patients with chronic low back pain](#)' above.)
- There are a number of other interventions that we do not routinely use in the treatment of subacute and chronic low back pain, including a variety of pharmacologic interventions and educational approaches as well as different physical treatment modalities. (See '[Therapies that we do not routinely recommend](#)' above.)

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