

## Non-specific Back Pain Guideline

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**Guidelines** are systematically developed statements to assist patients and providers in choosing appropriate health care for specific clinical conditions. While guidelines are useful aids to assist providers in determining appropriate practices for many patients with specific clinical problems or prevention issues, guidelines are not meant to replace the clinical judgment of the individual provider or establish a standard of care. The recommendations contained in the guidelines may not be appropriate for use in all circumstances. The inclusion of a recommendation in a guideline does not imply coverage. A decision to adopt any particular recommendation must be made by the provider in light of the circumstances presented by the individual patient.

# Major Changes as of March 2017

- The updated guideline now places more emphasis on **non-pharmacologic interventions** and less on medications.
- Several new non-pharmacologic interventions have been added to the guideline recommendations, including **tai chi**, **superficial heat**, **relaxation therapy**, and **mindfulness-based stress reduction**.
- A new workshop, **Living Well with Chronic Pain**, is now available to patients, in addition to the existing Living Well with Chronic Conditions workshop.
- **Duloxetine** is now recommended as an adjunct to acetaminophen or NSAIDs to treat chronic back pain in medium- or high-complexity patients.
- A new "**recommended intervention options**" table depicts the variety of approaches patients can choose to try, based on the physical and psychosocial dimensions of their back pain.
- The **PEG Tool** (Pain intensity, interference with Enjoyment of life, and interference with General activity) has replaced the Chronic Pain Scale as the **preferred tool for documenting pain and function**.

## Background

Back pain is a common condition that has significant impacts on patients' function and quality of life. Clinical approaches to back pain vary considerably among providers. This guideline is intended to help primary care teams do an effective initial assessment of back pain, select appropriate interventions to maximize the patient's function and quality of life, and minimize the use of unnecessary and potentially harmful interventions.

### Key points about back pain

- Most people experience back pain in their lifetime.
- Most back pain is "non-specific," with no specific identifiable spinal cause.
- Back pain caused by serious or urgent ("red flag") conditions is infrequent.
- For most patients with back pain, the condition will improve within a few days or weeks. In the absence of red flag conditions requiring immediate referral and treatment, the initial approach to back pain should include evaluation with the STarT Back, followed by reassurance, encouragement to stay active, emphasis on restoring function, and simple analgesics as needed.
- Psychosocial factors are stronger predictors of prognosis than clinical factors.
- Biomedical interventions commonly used to evaluate and treat back pain—such as imaging, medications, and epidural steroid injections—have been found to be of limited value and effectiveness.
- Non-pharmacologic interventions can improve both pain and function (see page 7).
- Acetaminophen is the preferred drug for initial treatment because of its stronger safety profile.
- Opioids are rarely indicated for the treatment of back pain. Opioid prescriptions for acute back pain, if made, should be *limited to 3 days* and followed by a check-back with the patient.

The treatment and follow-up recommendations in this guideline apply to patients with **non-specific back pain**. Back pain caused by degenerative disk disease, herniated ("slipped") disk, spinal stenosis, or other specific conditions are outside the scope of this guideline.

### Medications for back pain: differences from the ACP guideline

In February 2017, the American College of Physicians (ACP) published new/updated clinical practice guidelines for non-invasive treatments for acute, subacute, and chronic low back pain.

While the recommendations in the ACP and Kaiser Permanente Washington (KPWA) guidelines have much in common, there are differences regarding medications. Members of the KPWA guideline team discussed the ACP recommendations before finalizing the 2017 update of this guideline.

## Muscle relaxants

### For acute pain

The **KPWA** guideline recommends against the use of muscle relaxants to treat low back pain. The KPWA review focused on three medications rather than the entire muscle relaxants group. The review found:

- Tizanidine: Small effect, conflicting clinical significance, and higher occurrence of adverse events (Abdel Shaheed 2016)
- Cyclobenzaprine: No significant difference from placebo (Friedman 2015)
- Methocarbamol: Insufficient evidence to assess effect on acute low back pain

The **ACP** review found a higher and significant risk of central nervous system adverse events in patients treated with muscle relaxants; however, the ACP recommends muscle relaxants as second-line treatment for acute low back pain due to moderate evidence of a small improvement in pain.

### For chronic pain

Both KPWA and ACP indicated there was insufficient evidence to assess effect, and both recommend against the use of muscle relaxants to treat chronic low back pain.

## Acetaminophen

Because of its stronger safety profile, **KWPA** recommends acetaminophen as the preferred drug for initial treatment of non-specific back pain.

The **ACP** guideline does not recommend acetaminophen for treatment of non-specific back pain. The ACP based its recommendation on one recent, good-quality randomized controlled trial (Williams 2014) that found no effect on pain or functionality for acetaminophen for acute low back pain when acetaminophen was compared with placebo. For chronic back pain, there was insufficient evidence.

## Tramadol

Both KPWA and ACP based their recommendations on studies by Chaparro (2013) and Lee (2013). In addition, ACP reviewed a study by Schiphorst Preuper (2014).

### For acute pain

Both **KPWA** and **ACP** indicated there was insufficient evidence to assess effect, and both recommend against the use of tramadol for acute low back pain.

### For chronic pain

The **KPWA** guideline does not recommended tramadol for chronic low back pain. The KPWA review indicated low evidence of small effect.

The **ACP** recommends tramadol as second-line treatment for chronic back pain. The ACP review showed small-to-moderate effect on pain and function. However, ACP acknowledges that tramadol is associated with risk for abuse and should be considered only when other treatments have failed.

# Assessment

To differentiate non-specific back pain from more serious conditions, the assessment should begin with a history and physical exam to evaluate the patient for “red flag” symptoms (listed in Table 1, following page). If red flag symptoms are present, patients should be immediately referred to an appropriate specialist for further diagnosis and management. If the patient has no red flag symptoms, proceed with the STarT Back Tool to further assess the patient’s psychosocial and physical symptoms and establish the patient’s level of complexity.

## Pain and function assessment

To assess patients’ pain and function, use the Pain intensity, interference with Enjoyment of life, and interference with General activity (PEG) Tool. This tool is available in Epic as the SmartPhrase .pegscore, and as a documentation flowsheet, review flowsheet, and secure message. It is also available in hard copy.

### PEG Tool

1. What number best describes your **pain on average** in the past week?

0      1      2      3      4      5      6      7      8      9      10

No pain

Pain as bad as you  
can imagine

2. What number best describes how, during the past week, pain has interfered with your **enjoyment of life?**

0      1      2      3      4      5      6      7      8      9      10

Does not interfere

Completely  
interferes

3. What number best describes how, during the past week, pain has interfered with your **general activity?**

0      1      2      3      4      5      6      7      8      9      10

Does not interfere

Completely  
interferes

## History and physical exam

Discuss elements of the patient’s history that might suggest a specific cause, including:

1. This pain episode
2. Physical activity before and during this pain episode, and factors that exacerbate or alleviate the pain
3. Previous pain episodes

Assess the patient for the presence and severity of neurologic deficits.

## Diagnosis of non-specific back pain

Based on history and physical exam, and after ruling out red-flag conditions (such as cancer, infection, or cauda equina syndrome), the vast majority of back pain cases can be diagnosed as **non-specific**, i.e., with no specific identifiable spinal cause.

### A note about imaging

In general, imaging (X-ray, MRI) should **not** be considered in the first 6 weeks of a back pain episode unless red flag symptoms are present.

## Red flag warning signs requiring immediate or urgent evaluation

**Table 1. Red flag warning signs requiring immediate or urgent evaluation**

Possible diagnosis	Red flag symptoms
Cauda equina syndrome	<ul style="list-style-type: none"><li>• Saddle anesthesia</li><li>• Motor deficit at multiple levels</li><li>• Urinary retention</li><li>• Fecal incontinence</li></ul>
Significant or progressive neurological deficits	<ul style="list-style-type: none"><li>• Progressive motor weakness</li><li>• Severe or incapacitating back or leg pain (e.g., requiring hospitalization, precluding walking, or significantly limiting activities of daily living)</li></ul>
Cancer	<ul style="list-style-type: none"><li>• History of cancer with new onset low back pain</li><li>• Unexplained weight loss</li></ul>
Vertebral infection	<ul style="list-style-type: none"><li>• Fever</li><li>• IV drug use</li><li>• Recent infection</li></ul>
Vertebral compression fracture or fracture due to acute injury	<ul style="list-style-type: none"><li>• History of osteoporosis</li><li>• Use of corticosteroids</li><li>• Older age</li></ul>
Inflammatory back pain	<ul style="list-style-type: none"><li>• Morning stiffness lasting longer than 30 minutes (especially upon rising) in patient under age 40</li></ul>

## Complexity stratification

Stratification assesses the likelihood that a patient's non-specific back pain will become a high-intensity health problem by accounting for psychosocial factors—such as anxiety—as well as physical factors.

The recommended tool for stratifying patients with back pain is the Keele STarT Back Screening Tool, a 9-item questionnaire. The STarT Back may be filled out by patients directly as an attachment to an outgoing secure message prior to the appointment, or entered into an Epic documentation flowsheet by the medical assistant during patient rooming.

Using the STarT Back, patients are stratified into one of three categories: **low complexity, medium complexity, or high complexity.**

Complexity levels are not synonymous with pain severity or chronicity—for example, a patient with anxiety might be categorized as high-complexity despite having relatively mild pain, while a patient who has severe pain but is confident that it will go away might be at medium complexity—and they should not be the sole factor in determining appropriate interventions. Instead, complexity levels are most useful for:

- Establishing a common language for communication between clinicians and patients
- Identifying conditions that might otherwise be missed (e.g., depression, anxiety, substance abuse)
- Incorporating the patient's psychosocial needs into the care plan

## Back Pain Risk Stratification Tool (STarT Back)

This tool is available in Epic as a documentation flowsheet, review flowsheet, and secure message. It is also available in hard copy.

<b>STarT Back</b> Over the last 2 weeks.....	Disagree 0	Agree 1		
1. My back pain has spread down my leg(s) at some time in the last 2 weeks				
2. I have had pain in the shoulder or neck at some time in the last 2 weeks				
3. I have only walked short distances because of my back pain				
4. In the last 2 weeks, I have dressed more slowly than usual because of back pain				
5. It's not really safe for a person with a condition like mine to be physically active				
6. Worrying thoughts have been going through my mind a lot of the time				
7. I feel that my back pain is terrible and it's never going to get any better				
8. In general I have not enjoyed all the things I used to enjoy				
9. Overall, how bothersome has your back pain been in the last 2 weeks?				
Not at all	Slightly	Moderately	Very much	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0	0	0	1	1

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<b>STarT Back scoring</b>		
Scoring of the STarT Back Tool takes into account two scores: the total score as well as the sub score (sum of the points from questions 5–9 only).		
Complexity level	Total score (Q 1–9)	Sub score (Q 5–9)
LOW	3 or less	—
MEDIUM	4 or more	3 or less
HIGH		4 or more

**Low complexity** = minimal physical and psychosocial symptoms.

**Medium complexity** = moderate to severe physical symptoms with some psychosocial symptoms

**High complexity** = moderate to severe physical symptoms **and** prominent psychosocial symptoms, such as anxiety and fear

## Treatment

The primary goal of treatment is to maximize function and quality of life, rather than to completely eliminate pain. Some ongoing or recurrent pain is normal and not indicative of a serious problem.

Avoid exposing the patient to unhelpful or possibly risky interventions.

As a general rule, an intervention in which the patient is an active participant (e.g., physical therapy, walking, stretching, yoga) rather than a passive recipient (e.g., chiropractic, massage, acupuncture) is deemed to have greater potential to promote self-efficacy and self-management skills in the long term. If using physically passive interventions, such as spinal manipulation, acupuncture, or relaxation techniques, introduce an active option within a week.

Advise the patient to build strength and endurance **gradually**, moving naturally, avoiding guarded or bracing behavior, and focusing on low-impact forms of exercise.

Advise the patient that there are many different interventions available, so patients should try numerous options until they find the one that works best for them.

### Recommended intervention options by patient complexity

Low	Med	High	Intervention
X	X	X	Reassurance
X	X	X	Education
X	X	X	Usual activity as able, including work
X	X	X	Walking or other low-impact exercise
X	X	X	Self-care
X	X	X	Superficial heat
X	X	X	Acetaminophen
	X	X	Living Well with Chronic Conditions workshops
	X	X	Physical therapy
	X	X	Yoga
	X	X	Tai chi
	X	X	Relaxation therapy (meditation, progressive muscle relaxation, biofeedback, guided visualization)
	X	X	Acupuncture
	X	X	Spinal manipulation (chiropractic)
	X	X	Massage
	X	X	NSAIDs
	X	X	Duloxetine
	X	X	Physical Medicine & Rehabilitation/Spine Care Clinic (where available)
		X	Psychotherapy (cognitive behavioral therapy for pain, mindfulness-based stress reduction)

**Note:** Self-referral for physical therapy, acupuncture, or spinal manipulation is available to most patients. Advise patients to check with Member Services to determine their individual coverage and benefits.

## RECOMMENDED non-pharmacologic interventions

Please note that not all of these interventions are available or covered at KPWA; patients should contact Member Services for information on their own coverage.

- **Reassurance:** Address the patient's specific fears or worries (e.g., long-term disability, undiagnosed serious disease). Affirm/acknowledge the patient's pain and suffering/loss of function. Provide reassurance that for the majority of patients, back pain symptoms will resolve or significantly diminish in a few days or weeks.
- **Education:** Educate patients that the primary goal of treatment is to maximize function and quality of life, rather than to completely eliminate pain. Some ongoing or recurrent pain is normal and not indicative of a serious problem. Offer the shared decision making DVD "Chronic Low Back Pain: Managing Your Pain and Your Life," use the appropriate SmartPhrase for the patient's level of complexity (.AVSBackPainLow, .AVSBackPainMed, or .AVSBackPainHigh), and/or recommend the patient explore the online content on low back pain on Healthwise (<https://wa.kaiserpermanente.org/kbase/topic.jhtml?docId=%2Fhw56429%2Fhw56429.xml>).
- **Usual activity as able:** Encourage the patient to stay active and carry on with normal activities—including work—as much as possible while paying attention to correct posture to minimize spine loading. Advise the patient to temporarily limit or avoid specific activities known to increase mechanical stress on the spine (e.g., prolonged unsupported sitting, heavy lifting, and bending or twisting the back, especially while lifting).
- Encourage **low-impact activities such as walking**, swimming or elliptical. Walking places low stress on the spine and is available to almost everyone. Walking helps maintain endurance and function, and helps with pain. Recommend a gradual increase in exercise of no more than 10% per week. Advise patients to start slow with short walks 2–3 times per day and then increase their distance or speed every 3–5 days if there is no increase in symptoms.
- **Self-care:** Self-care includes staying physically active, getting enough sleep, connecting with friends and family, eating well, managing physical and emotional stressors, and staying involved in everyday activities. Advise the patient to identify enjoyable and meaningful activities that will increase strength, flexibility and endurance.
- **Superficial heat:** Heat may help to reduce low back pain. Advise the patient to apply heat for 15 to 20 minutes at a time. Moist heat (hot packs, baths) might work better than dry heat. If an electric heating pad is used, advise the patient to be careful not to fall asleep while the pad is on to avoid heat burn.
- **Living Well with Chronic Conditions/Chronic Pain:** Six-week workshops are offered in person and online (chronic conditions only). Participants support each other and work together to solve their problems. There is no charge for the workshops. Patients can register for the in-person workshops by calling the Resource Line at 1-800-2279 or for the web-based version at Better Choices, Better Health® on the Canary Health website (<https://eligibility-grouphealth.selfmanage.org/>).
- **Physical therapy (PT):** Evidence suggests improved outcomes for patients who have early PT. Most patients may self-refer to PT for evaluation and treatment; advise patients to check with Member Services to determine their individual coverage and benefits.
- **Relaxation therapy:** Relaxation therapy includes meditation, progressive muscle relaxation, biofeedback, and guided visualization. Educate patients that people who are in pain tend to tense their muscles and hold their breath, potentially leading to further tension and pain, and encourage them to practice frequent relaxation.
- **Yoga:** Benefits both pain and function. Beginners should practice under the supervision of a qualified instructor.
- **Tai chi:** Tai chi is a series of movements done slowly to improve posture, balance, coordination, endurance and flexibility.



- **Acupuncture:** Evidence suggests that acupuncture may improve chronic back pain in the short term. Long-term improvement is unknown. Most patients may self-refer for acupuncture; advise patients to check with Member Services to determine their individual coverage and benefits.
- **Spinal manipulation:** Evidence suggests moderate impact on both pain and function. Most patients may self-refer for spinal manipulation; advise patients to check with Member Services to determine their individual coverage and benefits.
- **Massage:** There is some evidence of moderate improvement in both pain and function with massage.
- **Physical Medicine & Rehabilitation (PMR):** Consider referral to PMR, which develops detailed treatment plans to enable individual patients to carry out their rehabilitation, including exercise and self-care. PMR can also provide a second opinion for patients with suboptimal response to a conservative treatment regimen.
- **Psychotherapy:** Consider a referral to Behavioral Health Services. There is evidence for two specific psychotherapies: cognitive behavioral therapy (CBT) for pain and mindfulness-based stress reduction (MBSR). The evidence does not show a difference between these two treatments. While the evidence suggests a potential long-term (> 1 year) benefit for improving pain, it is mixed on improving function. CBT for pain is currently available, on a limited basis, at KPWA. MBSR is not currently available at KPWA, but patients may opt to attend a community-based MBSR program.

## Non-pharmacologic interventions that are NOT recommended

The following interventions are **not** recommended due to **evidence suggesting lack of benefit:**

- Bed rest
- Traction

The following interventions are **not** recommended due to **insufficient evidence to determine benefit:**

- |   |   |
|---|---|
| • Back school                               | • Radiofrequency facet joint denervation                    |
| • Inferential therapy                       | • Sacroiliac joint injections                               |
| • Low-level laser therapy                   | • Trigger point/soft tissue injections                      |
| • Transcutaneous electric nerve stimulation | • Discography   |
| • Lumbar corset                             | • Kyphoplasty   |
| • Therapeutic ultrasound                    | • Percutaneous intradiscal radiofrequency thermocoagulation |
| • Nerve root blocks                         | • Vertebral axial decompression for back pain               |
| • Intra-discal electrothermal therapy       |   |
| • Prolotherapy                              |   |

### Epidural steroid injections

Epidural steroid injections are **not recommended** for patients with non-specific back pain, due to evidence suggesting lack of benefit (Manchikanti 2008, 2010) and associations with decreased bone mineral density and increased risk of fractures (Mandel 2013, Kang 2012). In particular, there are no data to support the use of repeated epidural steroid injections. The risk of harm increases with increased frequency of injections.

The Food and Drug Administration (FDA) does **not** approve of the use of corticosteroid injections into the epidural space and in April 2014 issued a warning that this practice may result in rare but serious adverse events, including loss of vision, stroke, paralysis, and death. See the FDA Safety Announcement at <http://www.fda.gov/Drugs/DrugSafety/ucm394280.htm>.

# Pharmacologic Options

Consider the risks of any medication and prescribe the lowest effective dose for the shortest period of time.

## Preferred medications: acetaminophen, NSAIDs

Most pharmacologic options for non-specific back pain have clear risks that outweigh any potential benefit. Monotherapy with acetaminophen or NSAIDs is recommended. The dosages given below may need to be modified based on the patient's risk factors.

### Acetaminophen

Because of its stronger safety profile, acetaminophen is the preferred drug for initial treatment of non-specific back pain.

Recommended initial dose: 500–650 mg t.i.d.

Maximum daily dose: 3,000 mg

*Note:* In patients with liver disease or alcohol use problems, the daily dose of acetaminophen should not exceed 1,000–1,500 mg.

### Non-steroidal anti-inflammatory drugs (NSAIDs)

For medium- or high-complexity patients, a trial of NSAIDs may be considered if acetaminophen has been ineffective. NSAIDs such as ibuprofen or naproxen should be used with caution in patients with cardiovascular morbidities, risk of gastrointestinal bleeding, or hepatic or renal dysfunction. Among the NSAIDs, meloxicam is partially selective and may have decreased risk of adverse GI effects compared to non-selective NSAIDs.

NSAID	Maximum daily dose
Ibuprofen	2,400 mg
Naproxen	1,250 mg
Meloxicam	15 mg

## Adjunct therapy for chronic pain: duloxetine

Duloxetine may be considered for medium- or high-complexity patients with **chronic** pain, and is preferred to opioid medications.

Recommended initial dose: 30 mg daily for 1 week, then increase to 60 mg daily

Maximum daily dose: 60 mg

*Note:* Duloxetine should not be abruptly discontinued, as withdrawal effects can occur.

## Special considerations: opioids

**Opioids, including tramadol, are rarely indicated for the treatment of back pain.** While opioids appear to be similarly efficacious to acetaminophen and NSAIDs, they have more risks and side effects, including the risk of dependence and substance abuse disorder. One study (AMDG 2015) showed that of patients who took opioids for 90 days or longer, 60 percent were still taking opioids 5 years later.

The Centers for Disease Control and Prevention (2016) recommends **against** prescribing opioids for chronic back pain. See the Chronic Opioid Therapy Safety Guideline. Low-quality evidence shows that opioids may reduce pain in patients with chronic low back pain in the short term. However, the effect is small and not clinically important, and long-term efficacy is unknown.

There is insufficient evidence to determine the effects of opioids on acute back pain. **Opioid prescriptions for acute back pain, if made, should be limited to 3 days and followed by a check-back with the patient.** As in all situations where opioid therapy is considered, the focus should be on improved functionality rather than complete pain relief.

## Medications that are NOT recommended

- Systemic corticosteroids
- Gabapentin
- Celecoxib (non-formulary)
- Topiramate
- Pregabalin
- Skeletal muscle relaxants

## Follow-up/Monitoring

- For high-complexity patients, early and frequent in-person follow-up may be appropriate. At a minimum, have patients check back at **2 weeks**.
- For low- and medium-complexity patients, follow up only as needed. Options for follow-up include a phone call, secure e-mail message, or office visit.
- Patients referred for spinal manipulation, acupuncture, or massage: Have patient check back after four visits with the referred specialty to demonstrate improved functionality.
- Patients should be educated to stay active to minimize the potential for relapse.

# Evidence Summary

To develop the Back Pain Guideline, the guideline team adapted recommendations from externally developed evidence-based guidelines and/or recommendations of organizations that establish community standards. The guideline team reviewed additional evidence in several areas of non-pharmacologic treatment.

## Adapted recommendations

Chou R, Deyo R, Friedly et al. *Noninvasive Treatments for Low Back Pain. Comparative Effectiveness Review No. 169*. AHRQ Publication No. 16-EHC004- EF. Rockville, MD: Agency for Healthcare Research and Quality; February 2016.

Kaiser Permanente Northwest Region. *Low Back Pain Clinical Practice Guidelines*. 2015.

National Institute for Health and Care Excellence (NICE). *Low back pain and sciatica in over 16s: assessment and management*. [NICE guideline 59](#). November 2016.

Qaseem A, Wilt TJ, McLean RM, Forcica MA; Clinical Guidelines Committee of the American College of Physicians. Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*. 2017 Feb 14. doi: 10.7326/M16-2367. [Epub ahead of print]

## Summary of evidence reviewed

### Mindfulness-based stress reduction (MBSR)

Three studies compared MBSR with cognitive behavioral therapy (CBT) or usual care or no treatment (Banth 2015, Cherkin 2016, Cramer 2012), and one study compared MBSR with a health education program (Morone 2016). All these studies except one (Cramer 2012) concluded that MBSR reduced pain, and two studies (Cherkin 2016, Morone 2016) reported an improvement in function with MBSR. In the Cherkin randomized controlled trial (RCT), the authors reported that although MBSR and CBT decreased back pain and functional limitations at 26 and 52 weeks, there were no clinically meaningful differences between these interventions. Overall, low-quality evidence suggests that MBSR may reduce pain and disability in adults with nonspecific chronic low back pain in comparison with usual care or no treatment.

### Opioids

#### Acute low back pain

There is insufficient evidence to determine the effects of opioids on acute low back pain.

#### Chronic low back pain

One systematic review (Chaparro 2013), one systematic review/meta-analysis (Abdel Shaheed 2016), and a number of RCTs (Bredow 2016, Cloutier 2013, Hale 2015, Lee 2013, Rauck 2015) compared opioids versus placebo and reported that opioids may reduce pain in the short term. However, the effect is small and not clinically important, and long-term efficacy is unknown. The main concerns in studies assessing opioids for the management of low back pain were high dropout rates, short follow-up periods, poor assessment of adverse events (such as abuse, overdose, and dependence), and variation in the dose.

### Acupuncture

#### Acute low back pain

There is insufficient evidence to determine whether acupuncture is effective for acute low back pain.

#### Chronic low back pain

One systematic review (Liu 2015) and one meta-analysis (Yuan 2016) found that acupuncture may reduce pain in the short term. However, the effect is not clinically important. The main limitations included high heterogeneity and short follow-up periods. In addition, harms were poorly assessed. Overall, the quality of evidence is low and results should be interpreted with caution.

## Muscle relaxants

The review focused on tizanidine, cyclobenzaprine, and methocarbamol.

### Acute low back pain

- One systematic review/meta-analysis (Abdel Shaheed 2016) assessed the effect of **tizanidine** by reviewing four studies that compared, respectively,
  - Tizanidine plus ibuprofen versus placebo plus ibuprofen,
  - Tizanidine versus placebo,
  - Aceclofenac plus tizanidine versus aceclofenac alone, and
  - Tramadol plus eperisone versus tramadol plus tizanidine.

Follow-up ranged from 1 week to 30 days. The authors reported that while tizanidine may reduce pain, the effect was small, clinical significance was conflicting, and there was a higher occurrence of adverse events.

- One RCT (Friedman 2015) compared **cyclobenzaprine** with placebo or oxycodone/acetaminophen in patients who received naproxen. The authors found no significant difference between cyclobenzaprine and placebo at week 1.
- For **methocarbamol**, the evidence is insufficient to assess the effect on acute low back pain.

### Chronic low back pain

There is insufficient evidence to determine whether muscle relaxants are effective for chronic low back pain.

## Epidural corticosteroid injections

Two systematic review/meta-analyses (Chou 2015, Manchikanti 2016) assessed the effect of epidural corticosteroid injections on radicular low back pain and non-radicular low back pain. There were conflicting results in pain reduction and function improvement for radiculopathy. In addition, no difference was found between epidural steroid injections and epidural local anesthetic injections in the reduction of pain and functional limitation.

## Anticonvulsants (pregabalin)

The review focused on pregabalin. A number of studies were reviewed (Baron 2010, Kalita 2014, Markman 2015, Sakai 2015). The trials focused on radiculopathy due to spinal stenosis or disc herniation. Fair-quality evidence in the Baron and Markman studies showed no difference between pregabalin and placebo in reducing radicular chronic low back pain. However, there is insufficient evidence to assess anticonvulsants for the treatment of acute low back pain and non-radicular chronic low back pain. In addition, the Markman study reported that the percentage of any side effects was higher for pregabalin than placebo (64% versus 35%).

## Duloxetine

Three RCTs (Schukro 2016, Skljarevski 2010, Skljarevski 2009) and two meta-analyses (Chung 2013, Urquhart 2010) compared duloxetine to placebo. The authors found that duloxetine may be more effective than placebo in reducing pain for chronic low back pain. Limitations included lack of adequate randomization, allocation concealment, and poor description of blinding methods. Although adverse events were not different between duloxetine and placebo, withdrawals were higher in patients treated with duloxetine.

## Education

A systematic review of 14 studies (Traeger 2015) reported that patient education increased reassurance in patients with acute and subacute low back pain more than usual care/control education in both the short and long term. In addition, education reduced primary care visits due to low back pain more than usual care/control education at 12 months. The overall quality of evidence is moderate.

### **Intervention for prevention of future episodes: exercise**

A systematic review and meta-analysis (Steffens 2016) evaluated the effectiveness of interventions for prevention of low back pain. The authors concluded that exercise in combination with education reduced the risk of low back pain (RR=0.55; 95% CI, 0.41–0.74) in the short term ( $\leq 12$  months) (medium-quality evidence) and long term ( $> 12$  months) (low-quality evidence). Low-quality evidence shows that exercise alone may decrease the risk of an episode of low back pain and sick leave in the short term. One of the main limitations was possible selection bias.

### **Multidisciplinary rehabilitation**

A systematic review (Kamper 2015) assessed the long- and short-term ( $< 3$  months) effects of multidisciplinary rehabilitation versus usual care in chronic low back pain, and found that the rehabilitation was more effective than usual care in decreasing pain and disability in both the short and long term. The studies assessing the long-term effect were of moderate quality. However, no statistically difference was found in terms of work status/return to work. In addition, multidisciplinary rehabilitation may improve quality of life on the short term. Compared to physical therapy, the same systematic review showed that multidisciplinary rehabilitation was more effective in reducing pain and disability in the long and short terms. Nevertheless, the evidence was of low quality. Compared to no multidisciplinary rehabilitation, multidisciplinary rehabilitation was effective in reducing pain and disability in the short term.

Overall, low- to moderate-quality evidence shows that multidisciplinary rehabilitation is more effective than usual care, physical therapy, and no multidisciplinary rehabilitation in reducing pain and disability in the short and long term among patients with nonspecific chronic low back pain.

### **Early physical therapy**

One RCT (Fritz 2015) evaluated the outcomes of early physiotherapy versus usual care in patients with recent onset of low back pain. Usual care included no additional interventions during the first 4 weeks and physiotherapy included 4 sessions of spinal manipulation, range-of motion exercises, and trunk-strengthening exercises for 3 weeks. Findings consisted of a moderate improvement in disability at 1 month ( $P=0.04$ ) and 3 months ( $P=0.02$ ). Likewise, there was a pain reduction at 1 month ( $P=0.004$ ) and 3 months ( $P=0.01$ ). However, the improvement was not clinically important. In addition, at 1 year no statistically significant improvement was reported for pain reduction and functional limitation.

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# Guideline Development Process and Team

## Development process

To develop the Non-specific Back Pain Guideline, the guideline team adapted recommendations from externally developed evidence-based guidelines and/or recommendations of organizations that establish community standards. The guideline team reviewed additional evidence in several areas of non-pharmacologic treatment. For details, see Evidence Summary and References.

This edition of the guideline was approved for publication by the Guideline Oversight Group in March 2017.

## Team

The Non-specific Back Pain Guideline development team included representatives from the following specialties: behavioral health, family medicine, Kaiser Permanente Washington Health Research Institute, neurosurgery, nursing operations, occupational medicine, pharmacy, physical medicine and rehabilitation, physical therapy, residency, and urgent care.

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## Disclosure of conflict of interest

Kaiser Permanente requires that team members participating on a guideline team disclose and resolve all potential conflicts of interest that arise from financial relationships between a guideline team member or guideline team member's spouse or partner and any commercial interests or proprietary entity that provides or produces health care–related products and/or services relevant to the content of the guideline.

Team members listed above have disclosed that their participation on the Non-specific Back Pain Guideline team includes no promotion of any commercial products or services, and that they have no relationships with commercial entities to report.