

Low Back Pain Medical Treatment

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- Most patients with acute back pain have **self-limited episodes** that resolve on their own; many do not seek medical care
- For patients who do seek medical care, pain, disability, and return to work typically improve rapidly in the **first month**
- **up to one third** of patients report persistent back pain of at least **moderate intensity 1 year after** an acute episode, and 1 in 5 report substantial limitations in activity
- Many noninvasive treatment options are available for radicular and non radicular low back pain, including **pharmacologic and non pharmacologic interventions**

- The purpose of this **American College of Physicians (ACP) guideline** is to provide treatment guidance based on the efficacy, comparative effectiveness, and safety of noninvasive pharmacologic and non pharmacologic treatments for **acute ,subacute ,and chronic LBP in primary care.**

- The review evaluated **pharmacologic** (acetaminophen, NSAIDs, opioids, skeletal muscle relaxants [SMRs], benzodiazepines, antidepressants, anti seizure medications, and systemic corticosteroids)
- **non pharmacologic** (psychological therapies, multidisciplinary rehabilitation, spinal manipulation, acupuncture, massage , exercise and related therapies, and various physical modalities) treatments for low back pain.

Evaluated outcomes

- reduction or elimination of LBP
- improvement in back-specific and overall **function**
- improvement in health-related **quality of life**
- reduction in **work disability**
- return to work
- global improvement
- number of **back pain episodes** or time between episodes
- patient satisfaction
- adverse effects

The magnitude of effect (small, moderate)

Table 1. Definitions for Magnitude of Effects, Based on Mean Between-Group Differences

Slight/Small	Moderate	Large/Substantial
Pain		
5-10 points on a 0- to 100-point VAS or the equivalent 0.5-1.0 points on a 0- to 10-point numerical rating scale or the equivalent	>10-20 points on a 0- to 100-point VAS or the equivalent >1-2 points on a 0- to 10-point numerical rating scale or the equivalent	>20 points on a 0- to 100-point VAS or the equivalent >2 points on a 0- to 10-point numerical rating scale or the equivalent
Function		
5-10 points on the ODI 1-2 points on the RDQ	>10-20 points on the ODI >2-5 points on the RDQ	>20 points on the ODI >5 points on the RDQ
Pain or function		
0.2-0.5 SMD	>0.5-0.8 SMD	>0.8 SMD

ODI = Oswestry Disability Index; RDQ = Roland Morris Disability Questionnaire; SMD = standardized mean difference; VAS = visual analogue scale.

Outcome assessment and effect sizes

- **The effect sizes** for most LBP treatments compared with placebo are **low** for both **acute & chronic LBP**

outcome

- **Patients' expectations** influence the outcome of treatment, with expectations being fulfilled **the main determinant**.
- expectations can both mediate and modulate placebo effects.
- The placebo effect is a genuine psychobiological event attributable to the overall therapeutic context, consisting of patient and clinician factors and factors associated with the treatment context, such as the nature of the treatment and the patient-clinician relationship

Factors that may support the use of interventions associated with small effects include

- low risk for harms
- low costs
- or strong patient preferences
- in addition, some patients will have greater-than-average effects.
- The magnitude of effects might vary depending on **baseline severity** ; most trials enrolled patients with at least moderate pain (for example, >5 points on a 0- to 10-point numerical rating scale).

acute low back pain

- goal : short-term **symptomatic relief**, since most will improve within four weeks
- typically : **non pharmacologic** treatment with superficial heat , etc. depending upon patient preference and their cost and accessibility
- For whom prefer pharmacotherapy or inadequate non pharmacologic approaches :**NSAID** with or without a skeletal **muscle relaxant** rather than [acetaminophen](#) for pharmacologic therapy
- 2017 updated guideline of the treatment of acute, subacute, and chronic low back pain from the American College of Physicians

Acetaminophen - acute LBP

Low-quality evidence

- **no difference** between acetaminophen and placebo for **pain** intensity **or function** through 4 weeks

paracetamol

- 12 reports (13 randomized trials) were included. There was “**high quality**” evidence that paracetamol is **ineffective** for reducing **pain** intensity) and **disability** or improving **quality of life** (0.4, –0.9 to 1.7) in the **short term** in people with LBP
- High quality” evidence showed that patients taking paracetamol are nearly four times more likely to have **abnormal results on liver function tests** (3.8, 1.9 to 7.4), but the clinical importance of this effect is uncertain

NSAIDs- acute LBP

- **Moderate-quality** evidence : a **small improvement in pain** intensity compared with placebo
- **Low-quality** evidence showed a **small increase in function** with NSAIDs compared with placebo
- Moderate-quality evidence showed that most head-to-head trials of one **NSAID versus another** showed no differences in pain relief in patients with acute LBP
- Low quality evidence showed no differences in pain between cyclooxygenase (COX)-2–selective NSAIDs versus traditional NSAIDs

skeletal muscle relaxants (SMRs)

- **Moderate-quality** evidence showed that SMRs improved **short-term pain relief** compared with placebo after 2 to 4 and 5 to 7 days
- **Low-quality** evidence showed **no differences** between **different SMRs** for any outcomes in patients with acute pain
- **Low quality** evidence showed **inconsistent** findings for the effect on pain intensity with **a combination of SMRs plus NSAIDs compared with NSAIDs alone**

naproxen

- Among patients with acute, non traumatic, non radicular LBP presenting to the ED
- adding **cyclobenzaprine** or **oxycodone/acetaminophen** to naproxen alone did not improve functional outcomes or pain at 1-week follow-up.
- These findings do not support use of these additional medications in this setting

acute LBP- corticosteroid

- **Low-quality evidence** showed **no difference** in pain or function between a single IM injection of methylprednisolone J Emerg Med. 2006;31:365-70 or a 5-day course of prednisolone compared with placebo J Emerg Med. 2014;47:65-70

***Other Therapies* - acute or subacute low back pain**

- Evidence was **insufficient to determine effectiveness of:**
 - Antidepressants
 - benzodiazepines
 - Anti seizure medications
 - opioids

Subacute and Chronic LBP

- the goal of treatment moves from "cure" to **controlling pain, maintaining function, and preventing disability**
- All patients should receive advice on self-care and instruction on the importance of **maintaining activity** as tolerated
- generally advise **non pharmacologic therapy initially** and favor **“active” interventions**
- **improve function, not just reduce pain**
- **Pharmacologic therapy in whom have inadequate symptom control with non pharmacologic measures**

Subacute and Chronic LBP

- subacute LBP : **NSAID** with or without a non benzodiazepine skeletal **muscle relaxant**
- an **NSAID** as initial therapy and [tramadol](#) or [duloxetine](#) as second-line therapy

Chronic LBP-*NSAIDs*

- **Moderate-quality** evidence : **small to moderate pain improvement** compared with placebo
- **Low-quality** evidence : **no to small** improvement in function
- **Moderate quality evidence** : head-to-head trials of one NSAID versus another showed no differences in pain relief
- There were no data on COX-2–selective NSAIDs.

Chronic LBP-*Opioids* compared with placebo

- **Moderate-quality** evidence: **strong opioids** (tapentadol, morphine, hydromorphone, and oxycodone) , **a small short-term improvement in pain** scores (about 1 point on a pain scale of 0 to 10) and **function**
- **Low-quality** evidence showed that **buprenorphine patches** improved **short-term pain** ; however, the improvement corresponded to **less than 1** point on a pain scale of 0 to 10
- **Moderate-quality** evidence , **no differences among different long acting** opioids for pain or function
- **low quality** evidence : **no** clear differences in pain relief between **long- and short-acting opioids**
- **Moderate-quality** evidence: **tramadol achieved moderate short-term pain** relief and a **small** improvement in **function**

Chronic LBP- *SMRs* versus placebo

- Evidence comparing was insufficient
- **Low-quality** evidence : **no differences in any outcome** between different SMRs for treatment of chronic low back pain

Chronic LBP-*Benzodiazepines*

- **Low-quality** evidence : **tetrazepam** improved pain relief at 5 to 7 days and resulted in **overall improvement** at 10 to 14 days compared with placebo

Chronic LBP-*Antidepressants* compared with placebo

- **Moderate-quality** evidence :**no difference in pain** between tricyclic antidepressants (**TCAs**) or selective serotonin reuptake inhibitors (**SSRIs**)
- **low-quality** evidence showed **no differences in function** for antidepressants
- **Moderate-quality** evidence : **duloxetine** was associated with a **small improvement in pain intensity and function**

Duloxetine 60 mg for chronic low back pain:

- **predictors of response to duloxetine for CLBP.**
- **post hoc analysis** of pooled data from **4 double-blind, RCT** of duloxetine (60 mg/day for **12–14 weeks**)
- **early improvement** ($\geq 15\%$ pain reduction at Week 2) was indicative of overall response.
- Patients with **multiple painful sites** had more benefit from duloxetine than patients with isolated CLBP.

Duloxetine for chronic LBP

- post hoc analysis of a **Japanese RCT** assessed whether patients with CLBP with early pain reduction or treatment-related adverse events of special interest (TR-AESIs; nausea, somnolence, constipation) have enhanced responses to duloxetine.
- Patients **with $\geq 30\%$ early pain reduction** (n = 108) or **early TR-AESIs** (n = 50) had significantly **greater improvements in pain and QOL** than placebo-treated patients (n = 226)
- both true responders and non responders may be identified early, based on the level of pain reduction after 1 month of duloxetine treatment

- The risk for **serious adverse** events did not differ between duloxetine and placebo,
- although duloxetine **was associated with increased risk for withdrawal due to adverse events**

Chronic LBP-*Other Therapies*

- **Evidence was insufficient** to determine the effect of :
 - Acetaminophen
 - Systemic corticosteroids
 - Anti seizure

acute or subacute Radicular LBP

- Ameliorate pain
 - Address the specific underlying process if necessary
-
- NSAIDs, acetaminophen
 - Temporary activity modification

acute or subacute Radicular LBP-*Benzodiazepines*

- **Low-quality evidence : no difference** between **diazepam** and placebo for:
 - function at 1 week through 1 year
 - analgesic use
 - return to work
 - or likelihood of Surgery through 1
- **Diazepam resulted in a lower likelihood of pain improvement at 1 week** compared with placebo.

Radicular LBP-*Systemic Corticosteroids*

- **Moderate-quality** evidence : **no differences in pain**
- and **no to small effect on function**

radicular LBP-*Other Therapies*

- **No RCTs evaluated:**
 - acetaminophen
 - SMRs
 - antidepressants
 - or opioids
- Results for **NSAIDs were inconsistent for pain**, and evidence was therefore **insufficient**
- There was **insufficient evidence** to determine the effect of **anti seizure** medications

Trial of **Pregabalin for Acute and Chronic Sciatica** as compared with placebo

- A RCT: either pregabalin at a dose of 150 mg per day to a maximum dose of 600 mg per day for up to 8 weeks
- A total of 209 patients underwent randomization
- **pregabalin did not significantly reduce the intensity of leg pain** and did not significantly improve other outcomes
- The incidence of **adverse events was significantly higher** in the pregabalin group than in the placebo group

chronic radiculopathy- [gabapentin](#) & [pregabalin](#)

- two trials of [gabapentin](#) and one trial of [pregabalin](#):
- only **small or unclear effects on pain**, which may be offset by their side effects.
- For **spinal stenosis**: one small (n = 55) randomized trial **added gabapentin**, to a regimen of supervised exercise therapy, lumbar supports, and NSAIDs in patients with **pseudoclaudication** : **gabapentin** had **moderately improved mean pain scores at four months** (2.9 versus 4.7 on a 0 to 10 scale).
- Another small (n = 26) randomized trial of patients with **neurogenic claudication** compared **pregabalin** with an active placebo ([diphenhydramine](#)). There **were no differences in function, pain** with ambulation, walking distance, or the Swiss Spinal Stenosis Questionnaire after **10 days**

Topiramate

- **moderately superior** to placebo for **pain relief** and slightly superior for **functional** improvement in patients with **chronic LBP**
- another trial: topiramate **modestly improved** pain in patients with **chronic radiculopathy**;
- however, it caused **frequent side effects**, and **many patients dropped out of the trial**

uptodate 2017

- More research is needed to determine effective treatments for radicular low back pain

Glucosamine

- little data to support its use for LBP
- In a six-month randomized trial of 250 patients with chronic LBP and degenerative lumbar osteoarthritis, there were **no differences in pain or quality-of-life scores** between the glucosamine sulfate (1500 mg daily) and placebo arm

Uptodate 2017

Recommendation 1- *acute or subacute LBP*

- *most patients improve over time **regardless of treatment**, clinicians and patients should select **non pharmacologic** treatment with **superficial heat (moderate-quality evidence)**, massage, acupuncture, or spinal manipulation (low-quality evidence).*
- *If pharmacologic treatment is desired, clinicians and patients should select **NSAIDs or skeletal muscle relaxants** (moderate-quality evidence). (Grade: strong recommendation)*

Recommendation 2 -*chronic LBP*

- *clinicians and patients should initially select **non pharmacologic** treatment with **exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction** (moderate-quality evidence)*
- *tai chi, yoga, motor control exercise, progressive relaxation, electromyography biofeedback, low-level laser therapy, cognitive behavioral therapy, or spinal manipulation (low-quality evidence). (Grade: strong recommendation)*

Recommendation 3-*chronic LBP*

- *an inadequate response to non pharmacologic therapy: should consider pharmacologic treatment with **NSAIDs as first-line** therapy,*
- *or **tramadol or duloxetine** as second-line therapy.*
- *only consider **opioids** as an option in patients who **have failed the aforementioned treatments** and only if the potential benefits outweigh the risks for individual patients after a discussion of known risks and realistic benefits with patients. (Grade: weak recommendation, moderate-quality evidence)*

High-Value Care

- **reassure** patients that acute or subacute low back pain usually improves over time regardless of treatment and avoid costly and potentially harmful treatments.
- For treatment of chronic LBP, select therapies with fewest harms and lowest costs.
- **Avoid costly therapies** and those with substantial potential harms, such as long-term opioids, and pharmacologic therapies that were **not shown to be effective, such as tricyclic antidepressants and selective serotonin reuptake inhibitors**

Pharmacological interventions

- Consider NSAIDs for managing LBP
- Prescribe oral NSAIDs LBP at the **lowest effective dose** for the **shortest possible period** of time.

- Consider **weak opioids** (with or without paracetamol) for managing acute LBP only if an NSAID is contraindicated, not tolerated or has been ineffective.
- **Do not offer paracetamol alone** for managing LBP.
- Do not routinely offer opioids for managing acute LBP

Controversies and uncertainties

- Many trials exclude **workers, children and older people** people with:
 - comorbidities**
 - individuals on **compensation**
 - immigrants** who do not speak the language of the country
- these patient **groups tend to have a worse prognosis** when they have LBP

summary

- **acetaminophen was ineffective** for acute LBP, **NSAIDs had smaller benefits for chronic LBP** than previously observed, **duloxetine was effective for chronic LBP**, and benzodiazepines were ineffective for radiculopathy.
- For **opioids**, evidence remains limited to **short-term trials** showing modest effects for chronic LBP; trials were not designed to assess **serious harms**.
- **Skeletal muscle relaxants** are effective for **short-term pain relief** in **acute** LBP but caused sedation.
- **Systemic corticosteroids do not seem to be effective.**
- Evidence is **insufficient** to determine the effects **of antiseizure** medications.
- More research is needed to understand the optimal selection of medications, the best combinations and sequencing of treatments, and the most effective medications for **radicular low back pain**