

IN THE NAME OF GOD

Pharmacologic treatment in Low Back Pain

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Low back pain is a **symptom**, not a disease, and has many causes
It is extremely common.

Approximately **40% of people** say they have had low back pain
within the past 6 months,

Most episodes **resolve with or without treatment** and the great
majority of people who have back pain do not seek medical care.

Studies have shown approximately **90% of people** who develop acute
LBP experience a resolution of the symptoms within 6 weeks.

Nonspecific Low Back Pain

Nearly 85% of those who seek medical care for low back pain do not receive a specific diagnosis.

The majority of these patients are likely to have a **multifactorial cause** for back pain, which includes deconditioning; poor muscle recruitment; emotional stress; and changes associated with aging and injury such as disk degeneration, arthritis, and ligamentous hypertrophy.

This type of back pain can be given many names; **nonspecific low back pain**, **simple backache**, **mechanical low back pain**, **lumbar strain**, and **spinal degeneration** are a few of the common names for this condition.

The history and physical examination do not suggest a more specific diagnosis, and diagnostic tests used to exclude other likely causes of the symptoms are negative.

Treatment of Low Back Pain

Most studies of the various treatments for low back pain, particularly chronic low back pain, unfortunately have shown **limited efficacy**.

Even the most commonly prescribed treatments, such as medications, exercise, and manipulation, in large trials tend to show improvements of only **10 to 20 points** on a 100-Point Pain Visual Analog Scale.

For this reason, most clinicians use **multiple treatments** on a particular patient to sufficient pain relief and an improvement in symptoms

Reassurance and Patient Education

Behavioral treatment/ cognitive behavioral approach

Pharmacotherapy

Management strategies

Includes management of the **underlying disease** process causing the pain and symptomatic treatment..

Pharmacotherapy is the first way to pain control in LBP .

It is essential to **individualize the pharmacotherapy** because the effect, side-effect and toxicity profile for each drug shows marked variation from person to person.

Each medication is given in **adequate doses** for the **appropriate length of time**.

Once adequate pain relief is obtained, the dose should be **maintained for 2 to 3 weeks**, while encouraging **appropriate exercise** and normal activity.

If pain control is not achieved with adequate doses of a drug, it is advisable to **discontinue that drug**.

Summary of the groups of medications to treat low back pain
based on the types of pain.

Type of pain	Drug class	Drug group-options
Nociceptive / Somatic • back pain with or without referred pain	Simple analgesics	Paracetamol
	Compound analgesics	Paracetamol + codeine
	NSAIDs	Diclofenac
	COXIBs	Celecoxib, Etoricoxib
	Opioids	Tramadol
Neuropathic / radicular pain • Burning back pain • Radicular leg pain	Anticonvulsants	Gabapentin, Pregabalin
	Antidepressants - TCAs (Tricyclic antidepressants.) - SNRIs (Serotonin and norepinephrine reuptake inhibitors)	Amitriptyline, Prothiaden Venlafaxine, Duloxetine
	Opioids	Tramadol, Oxycodone

Analgesics

- Simple analgesia **Paracetamol** is the first line of treatment especially if back pain is mild as it has few side effects and is widely available. **Do not exceed > 4g / day**
- If simple analgesics are not effective, compound analgesics and nonsteroidal anti-inflammatory drugs (**NSAIDs**)/**COX-2 selective inhibitors** can be used.
- In view of the long-term side-effects of NSAIDs, these drugs should only be used for **short-term duration (up to three months) or during flare-ups**.
- There is insufficient data on the use of NSAIDs in **chronic low back pain ?**

NSAIDS

- NSAIDS are **not more effective** than paracetamol or other drugs for ALBP.!
- **No single NSAIDS** overcome the others in terms of effectiveness also COX 2 inhibitors.
- strong evidence that various **NSAIDS are equally effective** .
- **Slightly more effective than placebo in CLBP.**
- Cox2 inhibitors associated with increased **cardiovascular risk**.
- *American pain society : short term efficacy with moderate effect for ALBP.*

Drug class	Drug	Recommended dosage	Side effects	Cautions and contraindications	Comments
Simple analgesic	Paracetamol	0.5-1 g every 4-6 hours to a max of 4g daily	Rare	Hepatic impairment, alcohol dependence	- Preferred drug particularly in elderly patients - Liver damage following overdosage
NSAIDs	Mefenamic acid	500 mg 8 hourly	Peptic ulcer, GI bleed, Platelet dysfunction, Renal failure, Hypertension, Allergic reaction in susceptible individuals, Increase in CVS events.	Gastroduodenal ulcer, Asthma, Bleeding disorder, Renal dysfunction, Ischaemic heart disease, Cerebrovascular disease, Inflammatory bowel disease,	Current data suggest that increased CV risk may be an effect of the NSAID/coxib class. Physicians and patients should weigh the benefits and risks of NSAID/coxib therapy.
	Diclofenac	75-150 mg daily in 2-3 divided doses			
	Naproxen	500 mg initially then 250 mg 8 hourly			
	Meloxicam (Mobic®)	7.5 - 15mg daily			
COX-2 inhibitor	Celecoxib (Celebrex®)	200 mg daily 400mg daily in acute pain	Renal impairment, Allergy reaction in susceptible individuals, Increase in CVS events.	Ischaemic heart disease, Cerebrovascular disease, Contraindicated in hypersensitivity to sulphonamides	Associated with a lower risk of serious upper Gastrointestinal side-effects

Opioids

- Weak opioids such as **Tramadol** (an atypical opioid) where the use of NSAIDs are contraindicated or not effective
- To be helpful for short-term treatment of chronic low back pain , and may be slightly better than NSAIDs in decreasing pain, there is no evidence to show it improves function.
- The use of opioids for chronic nonmalignant pain is much more controversial
- In elderly patients, chronic opioid therapy may have fewer lifethreatening risks than long-term daily use of NSAIDs/ COX-2 inhibitors.
- The use of intermittent injections of potent opioids such as pethidine for **chronic back pain is strongly discouraged** as it can lead to the development of **dependency**.
- **side effects** occur in more than half the participants. include nausea, constipation, somnolence, dizziness, and pruritus.
- A maximum 7-day supply on prescriptions for opioids .

Muscle relaxants

- The use of muscle relaxants remains **controversial**.
- One reason is that it is unclear what role muscle “spasms” play in low back pain. *Despite this controversy, They seem to be effective.!!*
- *American pain society : short term efficacy with moderate effect for ALBP.*
- *These medications fall into three classes of drug: **benzodiazepines, the nonbenzodiazepines that are antispasmodics, and antispasticity medication***

Benzodiazepines

- The mechanism of action : enhancement of **gamma-aminobutyric acid (GABA) inhibitory activity**.
- Effective for both **acute and chronic low back pain for short-term** pain relief (trials generally lasted from 5 to 14 days).
- **Adverse effects** sedation, dizziness, and mood disturbances. Rapid withdrawal can cause seizures.
- Have **serious abuse and addiction** potential,
- not recommended for low back pain except in unusual cases for a short time.
- No evidence exists to support that they are more effective than other muscle relaxants such as cyclobenzaprine.

Nonbenzodiazepines/ Antispasmodics

Medications with **multiple mechanisms** of action.

Cyclobenzaprine : structure similar to that of tricyclic antidepressants , act in the brainstem.

Methocarbamol , mechanism of action is not known, could be central nervous system depression.

Effective for **acute low back pain for short-term** pain relief (**usually 2 to 4 days' duration**).

Side effects : drowsiness and dizziness.

No evidence shows that one is more efficacious than another.

Little literature for chronic pain.

Non benzodiazepines/ Antispasticity drugs

- **Baclofen:** GABA derivative, inhibits transmission at spinal cord and brain , effective for short term pain relief in acute LBP .?
- **Dantrolene:** works on the muscle , may be effective in acute LBP, side effect :hepatotoxicity.
- **Tizanidine:** centrally acting alpha 2 agonist , may be effective in acute LBP (multiple trials),

Antidepressants

Tricyclic antidepressants (amitriptyline) are an effective treatment for many painful conditions, such as diabetic neuropathy, postherpetic neuralgia, fibromyalgia, and headaches.

No adequate data for the treatment of acute low back pain.

For chronic low back pain ??.

Side effects : dry mouth, blurry vision, constipation, dizziness, tremors, and urinary disturbances.

The selective serotonin reuptake inhibitors, SSRI (fluoxetine) are not effective in chronic low back pain,

The **selective serotonin and norepinephrine reuptake inhibitors, SNRI (duloxetine)** are effective for chronic LBP.

Antidepressants

TCA (Tricyclic antidepressant)	Amitriptyline	Start with 10-25 mg nocte. Increase weekly by 25 mg/d to a max of 150 mg/d	Anticholinergic effects eg. Dry mouth, drowsiness, urinary retention, arrhythmias	Not recommended in elderly patients and patients with cardiac disease, glaucoma, renal disease
SNRI (Serotonin and norepinephrine reuptake inhibitor)	Duloxetine	Start with 60mg once daily, increase to a maximum of 120 mg/ day in evenly divided doses.	GI disorders, excessive sweating, CNS disorders eg. dizziness, fatigue, insomnia, somnolence, blurred vision, dysuria	Concomitant use with MAOIs, potent CYP1A2 inhibitors. Hepatic or severe renal impairment. Uncontrolled narrow-angle glaucoma

Anti-convulsants

[gabapentin and pregabalin](#), are widely used for neuropathic pain.

Trials have not yet been conducted with these medications for the treatment of low back pain.

One study of [topiramate](#) showed small improvement in chronic low back pain. Side effects include sedation and diarrhea.

				poisoning
Anti-convulsants	Gabapentin (Neurontin®)	300-3600 mg/d. Day 1 : start at 300mg nocte. Day 2 : 300 mg bd. Day 3 : 300 mg tds. Thereafter, increase by 300 mg/d every 1-7 days	Drowsiness, Dizziness, GI symptoms and mild peripheral oedema	Dose adjustment needed in renal impairment
	Pregabalin (Lyrica®)	Start with 150mg/d (in 2 divided doses). If needed increase to 300mg/d after 3-7 days intervals, if needed increase to 600mg/d after 7-day interval.	Drowsiness, Dizziness, GI symptoms and mild peripheral oedema	Dose adjustment needed in renal impairment

Systemic Steroids

- IV, IM or Oral
- **Not** to be effective for **axial** (nonradicular) low back pain.
- In radicular LBP single IM dose or tapered oral dose of CS have not been found to be superior to placebo.
- IV bolus of 500 mg methylprednisolone provided a small and transient improvement in leg pain during first 3 days.
- **Side effects:** arrhythmia, circulatory collapse with IV methylprednisolone > 500 , flushing , hypertension , hyperglycemia.

Herbal Medicines

Several herbal medicines **are used** in the treatment of low back pain. Literature studies in this area tend to be of **low quality**, but several herbal preparations seem to **reduce pain more than placebo**, including *Capsicum frutescens* (cayenne) in a topical preparation, *Salix alba* (white willow bark), and *Harpagophytum procumbens* (devil's claw).

Topical medication

- Topical NSAIDs are effective for acute musculoskeletal disorders. However, there is no evidence supporting its long term use.

conservative management of lumbosacral radiculopathies

- **Nonsteroidal anti-inflammatory drugs (NSAIDs)** reduce inflammation and to provide pain relief. (small effect size)
- **No definite support exists for oral steroids** in the treatment of acute radiculopathy. **Moderate quality research in the short term.**
- The **neuropathic pain agents (anticonvulsants and tricyclic antidepressants)**: small improvements in pain scores.
- **chronic radiculopathy,**(meta-analysis) : NSAIDs, corticosteroids, tricyclic antidepressants, and anticonvulsants, no efficacy over placebo.
- **Opioids** : In acute radiculopathy have limited effectiveness, should be used only in severe cases.
- **Tumor necrosis factor alpha inhibitors,** no significant pain relief, limited clinical value.
- **Epidural steroid injection**

Pharmacological treatments for low back pain in adults: an overview of Cochrane Reviews

✉ Aidan G Cashin, Benedict M Wand, Neil E O'Connell, Hopin Lee, Rodrigo RN Rizzo, Matthew K Bagg, Edel O'Hagan, Christopher G Maher, Andrea D Furlan, Maurits W van Tulder, James H McAuley
Authors' declarations of interest

Version published: 04 April 2023 Version history

<https://doi.org/10.1002/14651858.CD013815.pub2> 

- Seven Cochrane Reviews that included 103 studies (22,238 participants) **six medicines or medicine classes: paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, benzodiazepines, opioids, and antidepressants**

An overview, phamacotherapy

- **Acute LBP:**
 - **Paracetamol:** No effectiveness
 - **NSAIDs :** Small between group difference
 - **Muscle relaxants & benzodiazepines:** Small between group difference
 - **Opioids:** Not identified for acute LBP
 - **Antidepressants :** Not identified for acute LBP
- **Chronic LBP:**
 - **Paracetamol:** Not identified for acute LBP
 - **NSAIDs:** Small between group difference
 - **Muscle Relaxants & benzodiazepines :** Low evidence for small between group difference
 - **Opioids:** Medium between group difference for tramadol
 - **Antidepressants:** No difference compared to placebo



The Spine Journal 20 (2020) 998–1024



Systematic Review

Guideline summary review: an evidence-based clinical guideline for the diagnosis and treatment of low back pain

D. Scott Kreiner, MD^{a,*}, Paul Matz, MD^b, Christopher M. Bono, MD^c, ..

Anticonvulsant: insufficient data

Antidepressants: not recommended

Non selective NSAIDs : fair evidence for effectiveness

Selective NSAIDs : insufficient data

Oral or IN steroids :not effective

Opioids for short term : fair evidence for effectiveness

Topical treatments:

Lidocaine patch :insufficient data

Topical capsicum: effective

THE NORTH AMERICAN SPINE SOCIETY , NASS

