MANAGEMENT
Goals of Treatment
Goals in Pain Management

• Involve the patient in the decision-making process
• Agree on realistic treatment goals **before** starting a treatment plan

Optimized pain relief
Improved function

Minimized adverse effects
Multimodal Treatment of Low Back Pain

- Pharmacotherapy
- Stress management
- Interventional management
- Biofeedback
- Complementary therapies
- Education
- Physical/occupational therapy
- Sleep hygiene
- Lifestyle management

Non-pharmacological Treatment
# Non-pharmacological Treatments for Low Back Pain

## Moderate Evidence of Effectiveness

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapy and exercise</td>
<td>Moderately effective in pain relief and functional improvement in adults with low back pain</td>
</tr>
<tr>
<td>Cognitive-behavioral therapy</td>
<td>May reduce pain and disability in patients with chronic and subacute low back pain</td>
</tr>
<tr>
<td>Intensive multidisciplinary biopsychosocial rehabilitation</td>
<td>Can relieve pain and improve function in low back pain</td>
</tr>
<tr>
<td>Massage</td>
<td>May benefit patients with non-specific subacute and chronic low back pain</td>
</tr>
<tr>
<td>Yoga</td>
<td>May benefit patients with chronic low back pain</td>
</tr>
<tr>
<td>Heat therapy</td>
<td>May provide short-term pain reduction in patients with subacute low back pain</td>
</tr>
<tr>
<td>Medium-firm mattress</td>
<td>Associated with less pain and disability than firm mattresses</td>
</tr>
<tr>
<td>Transcutaneous electrical nerve stimulation</td>
<td>Controversial with evidence both for and against</td>
</tr>
</tbody>
</table>

## Sufficient Evidence of Effectiveness

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function-centered treatment</td>
<td>More effective than pain-centered treatment for an increase in days able to work in patients with subacute low back pain lasting more than 6 weeks</td>
</tr>
<tr>
<td>Acupuncture</td>
<td>More effective than conventional therapy but not more effective than sham acupuncture</td>
</tr>
</tbody>
</table>

---

Evidence suggests bed rest and traction are **NOT** useful
The multidisciplinary approach and combined physical and psychological interventions with cognitive behavioral therapy and exercise are highly recommended for patients with a high degree of disability and/or significant psychological distress and who have received at least one intensive treatment.
Return to Work Recommendations for Patients with Low Back Pain

• **High Level of Evidence**
  
  – **Acute low back pain** (duration <6 weeks), non-specific or associated with neuropathic pain (mixed):
    
    • Patients should remain active
    • Patients should continue everyday occupational activities with some initial restrictions
    • Look for yellow flags, especially psychosocial occupational factors

  – **Subacute low back pain** (duration of 6–12 weeks):
    
    • Continue to look for yellow flags
    • Refer patient to an intensive rehabilitation program
    • Encourage patients to remain active

Therapeutic Recommendations for Patients with Low Back Pain

- **Manual therapy** (moderate level of evidence):
  - Techniques should be performed by trained and certified personnel
  - Techniques should never be performed if red flags are present
  - Techniques include:
  - Spinal manipulation
    - In acute and chronic pain
    - May lead to short-term improvements
  - Massage
  - Osteopathy

Therapeutic Recommendations for Patients with Low Back Pain (cont’d)

• Intensive interdisciplinary rehabilitation (moderate quality of evidence)
  – Physical activity and exercise therapy
  – Use actively in subacute and chronic low back pain
  – No one technique is better than others
  – Techniques include:
    • Back school
    • Aerobics
    • Stretching
    • Hydrotherapy
    • Lumbar stabilization exercises

Therapeutic Recommendations for Patients with Low Back Pain (cont’d)

- **Acupuncture** (moderate quality of evidence)
  - Must be prescribed as a complement and part of an interdisciplinary process

- **Yoga** (moderate quality of evidence)

- **Interdisciplinary work**
  - Teamwork (pain clinics) (convincing quality of evidence)

- **Cognitive behavioral therapy** (moderate quality of evidence)
  - Biological, psychological and social factors must be addressed simultaneously
  - Must be combined with other therapies
  - Acts on affective stress, self-sufficiency, catastrophic thinking, secondary gains

Therapeutic Recommendations for Patients with Low Back Pain (cont’d)

- Physical measures
  - Superficial heat (good evidence) - only in acute low back pain
  - Interferential currents
  - Muscle stimulation with electricity
  - Ultrasound
  - Cold and hot packs
  - Transcutaneous electrical nerve stimulation

Little evidence to recommend

Vitamins and Herbal Products for Management of Low Back Pain

- Vitamins include B1, B6, B12 and C
- Minerals include zinc and manganese
- Other products include glucosamine, devil’s claw, willow bark, capsicum and bromelina
- Mechanisms of action are unknown
  - Some B vitamins may have anti-inflammatory and anti-nociceptive properties
- Evidence is insufficient to recommend any of these products for management of low back pain

Approaches with No Therapeutic Recommendation for Management of Low Back Pain

- Bed rest
- Traction (sustained or intermittent)
- External lumbar support
- Laser therapy
- Biofeedback
- Prolotherapy
  - Sclerosing injection of 20–30 mL of a mixture of dextrose, glycerin, phenol and lidocaine to affected joints or ligaments
Surgery to Relieve Low Back Pain

• Quality of evidence is weak and contradictory
  – Patients with depression, neurosis, secondary gain, lawsuits, and certain personality disorders are not candidates for surgery and must be treated conservatively
  – Establish the exact cause of chronic low back pain
  – Degenerative changes cannot be the only reasons
  – Surgery not useful in the presence of instability, serious pathology or neural compression
  – There are no differences among various elements for fusion
  – In radiculopathy, early surgery improves pain more rapidly than conservative treatment
    • Final result at 24 months is the same with or without surgery
  – In spinal stenosis, surgery provides more relief than conservative treatment

Surgical Procedures Not Recommended

• Quality of evidence convincing for negative recommendation
  – Disc arthroplasty
    • No differences from arthrodesis (fusion)
    • Poor results in cases of non-specific lower back pain
  – Dynamic stabilization (dynamic or static spacers)
    – No evidence supports use in chronic low back pain
  – Intradiscal electrotherapy (IDET)
    – Very modest pain relief
  – Nucleoplasty
    – Improvement in axial pain is less than 50%

## Invasive/Surgical Treatment for Low Back Pain*

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinal cord stimulation</td>
<td>• May reduce pain in patients for whom surgery was unsuccessful</td>
</tr>
</tbody>
</table>
| Facet/epidural steroid injection | • NO significant differences in control of low back pain at 24 hours, 3–6 months or 1 year post-injection  
• No significant differences in average functional disability or need for surgery |
| Spinal surgery *In situ* fusion/posterior instrumentation/ anterior instrumentation | • NO significant differences compared to conservative management plus rehabilitation exercises.  
• Surgical procedures increase index of fusion, but do NOT improve clinical results  
• Surgical procedures result in more complications |

*Level of evidence is moderate for all procedures listed*

Pharmacological Treatment
Pharmacotherapy for Low Back Pain

• Treatment must balance patient expectations for pain relief and possible analgesic effect of therapy
• Patients should be educated about the medication, treatment objectives and expected results
• Psychosocial factors and emotional distress are stronger predictors of treatment outcome than physical examination findings or the duration and severity of pain
Mechanism-Based Pharmacological Treatment of Nociceptive/Inflammatory Pain

- Noxious stimuli
- Peripheral sensitization
- Transduction
- Nociceptive afferent fiber
- Transmission
- Inflammation
- nsNSAIDs/coxibs, opioids
- Central sensitization
- Descending modulation
- Ascending input
- Perception
- Opioids
- α2δ ligands
- Acetaminophen
- Antidepressants
- nsNSAIDs/coxibs
- Opioids

Coxib = COX-2 inhibitor; nsNSAID = non-specific non-steroidal anti-inflammatory drug
Acetaminophen for Management of Low Back Pain

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>Safety</th>
<th>Mechanism of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Effective</td>
<td>• Favorable safety profile and low cost</td>
<td>• Unclear</td>
</tr>
<tr>
<td>• Efficacy improved by addition of nsNSAIDs or coxibs</td>
<td>• May cause liver damage at doses higher than 4 g/day</td>
<td></td>
</tr>
</tbody>
</table>

Acetaminophen is the first-line option in acute and chronic low back pain.

Coxib = COX-2-specific inhibitor; nsNSAID = non-selective non-steroidal anti-inflammatory drug
# nsNSAIDs/Coxibs for Management of Low Back Pain

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>Safety</th>
<th>Mechanism of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Effective</td>
<td>• Gastrointestinal risk</td>
<td>• Block action of COX-2 enzyme, which is induced by inflammatory stimuli and results in increased production of prostaglandins</td>
</tr>
<tr>
<td>• More effective than acetaminophen alone</td>
<td>• Cardiovascular risk</td>
<td>• Coxibs specifically inhibit COX-2, while nsNSAIDs block action of COX-2 and COX-1 enzyme, which is involved in gastrointestinal cytoprotection and platelet activity</td>
</tr>
<tr>
<td>• Improved efficacy in combination with acetaminophen</td>
<td>• Renal risk</td>
<td></td>
</tr>
</tbody>
</table>

First-line option in acute and chronic low back pain

**CI** = confidence interval; **coxib** = COX-2-specific inhibitor; **nsNSAID** = non-selective non-steroidal anti-inflammatory drug; **RR** = relative risk

nsNSAIDs/Coxibs for Management of Low Back Pain

**General Recommendations**

- An nsNSAID or coxib may be indicated when an anti-inflammatory analgesic is recommended.
- Consider individual risk of side effects
  - Especially in older adults and individuals at increased risk for side effects.
- Consider patient preference.

Recommendations for the Use of nsNSAIDs and Coxibs

• For individuals over the age of 45 years, nsNSAIDs and coxibs should be co-prescribed with a PPI.

Coxib = COX-2-specific inhibitor; nsNSAID = non-selective non-steroidal anti-inflammatory drug;
National Collaborating Centre for Primary Care and Royal College of General Practitioners; London, UK: 2009.
## NSAIDs Commonly Used to Manage Low Back Pain

<table>
<thead>
<tr>
<th>Drug</th>
<th>Oral dose</th>
<th>Maximum Daily dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Propionic acid derivatives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Ibuprofen</td>
<td>200–400 mg every 48 h</td>
<td>3200 mg</td>
</tr>
<tr>
<td>• Naproxen</td>
<td>250 mg 3 or 4 times per day</td>
<td>1250 mg</td>
</tr>
<tr>
<td><strong>Acetic acid derivatives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Sulindac</td>
<td>150–200 mg every 12 h</td>
<td>1000 mg</td>
</tr>
<tr>
<td>• Etodolac</td>
<td>200–400 mg 3 or 4 times/day</td>
<td>40 mg (5 days maximum)</td>
</tr>
<tr>
<td>• Ketorolac</td>
<td>10 mg every 4–6 h</td>
<td>150 mg</td>
</tr>
<tr>
<td>• Diclofenac</td>
<td>50 mg every 8 h</td>
<td></td>
</tr>
<tr>
<td><strong>Enolic acid derivatives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Piroxicam</td>
<td>10–20 mg every 12 h</td>
<td>20 mg</td>
</tr>
<tr>
<td>• Meloxicam</td>
<td>7.5–15 mg/day</td>
<td>15 mg</td>
</tr>
<tr>
<td>• Nabumetone</td>
<td>500–1000 mg every 12–24 h</td>
<td>2000 mg</td>
</tr>
<tr>
<td><strong>Coxibs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Celecoxib</td>
<td>100–200 mg every 12 or 24 h</td>
<td></td>
</tr>
</tbody>
</table>

Coxib = COX-2-selective inhibitor; NSAID = non-steroidal anti-inflammatory drug

Adverse Effects of nsNSAIDs/Coxibs

• **All NSAIDs:**
  - Gastroenteropathy
    - Gastritis, bleeding, ulceration, perforation
  - Cardiovascular thrombotic events
  - Renovascular effects
    - Decreased renal blood flow
    - Fluid retention/edema
    - Hypertension
  - Hypersensitivity

• **Cox-1-mediated NSAIDs (nsNSAIDs):**
  - Decreased platelet aggregation

Coxib = COX-2-specific inhibitor; NSAID = non-steroidal anti-inflammatory drug; nsNSAID = non-selective non-steroidal anti-inflammatory drug
Composite includes non-fatal myocardial infarction, non-fatal stroke, or cardiovascular death compared with placebo; chart based on network meta-analysis involving 30 trials and over 100,000 patients.

Coxib = COX-2 inhibitor; nsNSAID = non-selective non-steroidal anti-inflammatory drug

Gastrointestinal Risk with nsNSAIDs/Coxibs

Pooled Relative Risks and 95% CIs of Upper Gastrointestinal Complications

CI = confidence interval; coxib = COX-2 inhibitor; NSAID = non-steroidal anti-inflammatory drug; nsNSAID = non-selective non-steroidal anti-inflammatory drug

Risk Factors for Gastrointestinal Complications Associated with nsNSAIDs/Coxibs

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio/Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of GI bleeding/perforation</td>
<td>13.5</td>
</tr>
<tr>
<td>Concomitant use of anticoagulants</td>
<td>6.4</td>
</tr>
<tr>
<td>History of peptic ulcer</td>
<td>6.1</td>
</tr>
<tr>
<td>Age ≥60 years</td>
<td>5.5</td>
</tr>
<tr>
<td>Single or multiple use of NSAID</td>
<td>4.7</td>
</tr>
<tr>
<td>Helicobacter pylori infection</td>
<td>4.3</td>
</tr>
<tr>
<td>Use of low-dose ASA within 30 days</td>
<td>4.1</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>2.4</td>
</tr>
<tr>
<td>Concomitant use of glucocorticoids</td>
<td>2.2</td>
</tr>
<tr>
<td>Smoking</td>
<td>2.0</td>
</tr>
</tbody>
</table>

ASA = acetylsalicylic acid; coxib = COX-2-specific inhibitor; GI = gastrointestinal; NSAID = non-steroidal anti-inflammatory drug; nsNSAID = non-selective non-steroidal anti-inflammatory drug; SSRI = selective serotonin reuptake inhibitor

Gastrointestinal Effects of nsNSAIDs/Coxibs Beyond the Upper Gastrointestinal Tract

- There is strong evidence to suggest potentially clinically relevant adverse gastrointestinal events are not limited to the upper gastrointestinal tract
- Studies suggest NSAIDs increase the risk for lower gastrointestinal clinical events

*Lower gastrointestinal means distal to the ligament of Treitz or fourth segment of the duodenum
Coxib = COX-2-specific inhibitor; GI = gastrointestinal; nsNSAID = non-selective non-steroidal anti-inflammatory drug
### Guidelines for nsNSAIDs/Coxibs Use Based on Gastrointestinal Risk and ASA Use

<table>
<thead>
<tr>
<th>Gastrointestinal risk</th>
<th>Not elevated</th>
<th>Elevated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not on ASA</td>
<td>nsNSAID alone</td>
<td>Coxib</td>
</tr>
<tr>
<td></td>
<td></td>
<td>nsNSAID + PPI</td>
</tr>
<tr>
<td>On ASA</td>
<td>Coxib + PPI</td>
<td>Coxib + PPI</td>
</tr>
<tr>
<td></td>
<td>nsNSAID + PPI</td>
<td>nsNSAID + PPI</td>
</tr>
</tbody>
</table>

ASA = acetylsalicylic acid; coxib = COX-2-specific inhibitor; nsNSAID = non-selective non-steroidal anti-inflammatory drug; PPI = proton pump inhibitor.

Opioids for the Management of Low Back Pain

Acute or chronic severe low back pain for short periods of time

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>Safety</th>
<th>Mechanism of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Effective</td>
<td>• Multiple side effects</td>
<td>• Alter limbic system activity</td>
</tr>
<tr>
<td>• Evidence insufficient to recommend one opioid over another</td>
<td>• Potential for abuse or addiction</td>
<td>• Modify sensory and affective pain aspects</td>
</tr>
<tr>
<td>• Efficacy enhanced by addition of acetaminophen and/or nsNSAIDs/coxibs</td>
<td></td>
<td>• Activate descending pathways that modulate transmission in spinal cord</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Affect transduction of pain stimuli to nerve impulses</td>
</tr>
</tbody>
</table>

Coxib = COX-2-specific inhibitor; nsNSAID = non-specific non-steroidal anti-inflammatory drug

Tramadol for the Management of Low Back Pain

- “Atypical” opioid analgesic
- Unique mechanism of action
  - Noradrenergic and serotoninergic pathways
  - Opioid effect depends on conversion to active O-demethylated metabolite M1
- Weak binding affinity to mu opioid receptor
- Clinical studies of efficacy in low back pain
- Consider avoiding use in patients with diabetes due to potential for hypoglycemia

## Adverse Effects of Opioids

<table>
<thead>
<tr>
<th>System</th>
<th>Adverse effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal</td>
<td>Nausea, vomiting, constipation</td>
</tr>
<tr>
<td>CNS</td>
<td>Cognitive impairment, sedation, lightheadedness, dizziness</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Respiratory depression</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>Orthostatic hypotension, fainting</td>
</tr>
<tr>
<td>Other</td>
<td>Urticaria, miosis, sweating, urinary retention</td>
</tr>
</tbody>
</table>

*CNS = central nervous system*

APS and AAPM Treatment Guidelines for Non-cancer Pain: Recommendations for Clinicians

- Stratify risks when selecting patients for long-term opiate
- Advise patients of risks and benefits of chronic opioid use
- Provide patients with the schema for pain treatment
- Consider initial use of opioid therapy as a trial treatment
  - Individualize selection, initial dosage and titration
- Exercise caution if methadone is used during the initial period and titration because of its unique properties
- Provide follow-up for efficacy, adverse effects and possible deviations
- Patients with a history of drug abuse or psychiatric problems should have frequent monitoring and consultation with a mental health specialist

Re-evaluate risks and benefits of opioid therapy
Consider rotation if patient does not obtain adequate efficacy or if adverse events are intolerable during the titration period
Anticipate and treat adverse events associated with opiates
Include interdisciplinary psychotherapeutic interventions and complementary non-opioid therapies
Advise patients about possible cognitive impairment in daily activities (e.g., driving)
Help patients find a medical care facility for their general care
Consider rescue opioid therapy for incidental pain
Advise patients about the risks and benefits of chronic opioid therapy
Tools for Detecting Risks Associated with Opioids

• Patient self-reporting questionnaires to assess risk of aberrant behavior
  – SOAPP (Screener and Opioid Assessment for Patients with Pain) (Version 1 and SOAPP-Revised)
  – CAGE-AID (CAGE* Adapted to Include Drugs)
  – SISAP (Screening Instrument for Substance Abuse Potential)
  – ORT (Opioid Risk Tool)

• Questionnaire administered by physician to assess risks and benefits
  – DIRE (Diagnosis, Intractability, Risk, Efficacy)

*The CAGE questionnaire comprises 4 simple questions to detect alcohol abuse: Have you ever: (1) felt the need to cut down your drinking; (2) felt annoyed by criticism of your drinking; (3) had guilty feelings about drinking; and (4) taken a morning eye opener? Chou R et al. J Pain 2009; 10(2):113-30; Gardner-Nix J. CMAJ 2003; 169(1): 38-43; O'Brien CP. JAMA 2008; 300(17):2054-6.
# Recommendations for the Use of Opioids

<table>
<thead>
<tr>
<th>Clinical query</th>
<th>Summary of the evidence</th>
</tr>
</thead>
</table>
| Relevant selection from the opioid guidelines | - Evidence shows tapentadol and the buprenorphine transdermal system are clinically effective  
- Current opioid guidelines recommend the use of weak and strong opioids taking into account patient preferences and requirements... |
Muscle Relaxants for Management of Low Back Pain

- Diverse group of drugs
- Mechanisms of action not clarified
- Use is controversial, mainly due to side effects and potential for abuse and dependency
- Guidelines do not universally recommend use of muscle relaxants in management of low back pain
- Provide short-term relief of low back pain
  - No differences in efficacy and safety
  - Very few short-term studies
  - No evidence supports long-term use or recommends one over the other

## Muscle Relaxants

<table>
<thead>
<tr>
<th>Classification</th>
<th>Drug</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antispastic</td>
<td>Baclofen</td>
<td>• Indicated in spasticity associated with central nervous system injury</td>
</tr>
<tr>
<td></td>
<td>Tizanidine</td>
<td>• Not recommended for management of low back pain</td>
</tr>
<tr>
<td></td>
<td>Dantrolene</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diazepam</td>
<td></td>
</tr>
<tr>
<td>Antispasmodic</td>
<td>Cyclobenzaprine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metocarbamol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carisoprodol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metaxalone</td>
<td></td>
</tr>
</tbody>
</table>

Mechanism-Based Pharmacological Treatment of Neuropathic Pain

Medications affecting peripheral sensitization:
- Capsaicin
- Local anesthetics
- TCAs

Medications affecting descending modulation:
- SNRIs
- TCAs
- Tramadol, opioids

Medications affecting central sensitization:
- $\alpha_2\delta$ ligands
- TCAs
- Tramadol, opioids

SNRI = serotonin-norepinephrine reuptake inhibitor; TCA = tricyclic antidepressant

**α2δ Ligands* for Management of Low Back Pain**

Useful in combination with other treatments for low back pain with a neuropathic component

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>Safety</th>
<th>Mechanism of Action</th>
</tr>
</thead>
</table>
| • Pregabalin + coxib combination is more effective than each drug used alone for management of chronic low back pain | • Most common side effects are dizziness and somnolence | • Bind to α₂δ subunit of calcium channel, which is upregulated in neuropathic pain  
• Binding reduces neurotransmitter release and pain sensitization |

*Gabapentin and pregabalin are α₂δ ligands  
Coxib = COX-2-specific inhibitor  
# Antidepressants for Management of Low Back Pain

Useful in combination with other treatments for low back pain with a neuropathic component

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>Safety</th>
<th>Mechanism of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not recommended for non-specific acute low back pain</td>
<td>TCAs can cause cognitive disorders, confusion, gait disturbance and falls</td>
<td>Inhibit reuptake of serotonin and norepinephrine, enhancing descending modulation</td>
</tr>
<tr>
<td>May be considered for low back pain with a neuropathic component</td>
<td>SNRIs are contraindicated in severe hepatic dysfunction or unstable arterial hypertension</td>
<td></td>
</tr>
</tbody>
</table>

TCA = tricyclic antidepressant; SNRI = serotonin norepinephrine reuptake inhibitor

Analgesic Intervention for Management of Low Back Pain

• **Epidural block with steroids** (high quality of evidence)
  - Reasonable alternative to surgery
  - Recommend only for radiculopathy
  - Transforaminal route is preferred
  - Always image-guided
  - Use small-particle steroids
    • Dexamethasone 4 mg is sufficient

Analgesic Intervention for Management of Low Back Pain (cont’d)

• **Facet block** (moderate quality of evidence)
  - Many false positive results
  - Significant placebo effect
  - At least 2 blocks must be performed before a more advanced form of therapy is recommended
  - Pericapsular or medial branch are equally effective

• **Radiofrequency lysis** (low quality of evidence)
  - Root and facet
    - More prolonged relief
    - Ineffective for failed spinal surgery syndrome

Combined Therapy for Management of Low Back Pain

- Type of therapy used by many physicians
- Muscle relaxers + analgesic or NSAID
- Opioids + NSAID
- Insufficient evidence to support a recommendation about its use in low back pain

NSAID = non-steroidal anti-inflammatory drug

## Therapies Not Recommended for Low Back Pain

<table>
<thead>
<tr>
<th>ASA</th>
<th>Benzodiazepines</th>
<th>Systemic Corticosteroids</th>
</tr>
</thead>
</table>
| • Insufficient evidence to permit recommendation of its use as an analgesic in patients with low back pain | • Risk of abuse, addiction and tolerance | • Oral or parenteral  
• No more effective than placebo |

ASA = acetylsalicylic acid

# Pharmacological Treatment of Low Back Pain

<table>
<thead>
<tr>
<th>Drug</th>
<th>Details</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>nsNSAIDs</td>
<td>• Can reduce pain in chronic low back pain</td>
<td>Moderate</td>
</tr>
<tr>
<td>Coxibs</td>
<td>• Superior analgesia vs. nsNSAIDs • Reduced consumption of concurrent therapy</td>
<td>Moderate</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>• Can reduce pain in the short term in non-specific low back pain • Risk of adverse effects is unclear</td>
<td>Moderate</td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>• Can reduce pain in the short term in non-specific low back pain • Risk of adverse effects is unclear</td>
<td>Low</td>
</tr>
</tbody>
</table>

*Coxib = COX-2-specific inhibitor; nsNSAID = non-selective non-steroidal anti-inflammatory drug*

Pharmacological Treatment of Low Back Pain (cont’d)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Details</th>
<th>Level of evidence</th>
</tr>
</thead>
</table>
| Non-benzodiazepine muscle relaxers | • No clear data on effectiveness on non-specific low back pain  
• Risk of adverse effects is unclear | Low               |
| Neuromodulators (e.g., pregabalin) | • In combination with a coxib can reduce low back pain severity within 4 weeks | Low               |
| Antidepressants (duloxetine)  | • Can improve chronic low back pain but extent of benefit is unclear                      | Moderate          |
| TCAs                          | • Reduce pain in non-specific low back pain                                                | Moderate          |
| Opioids                       | • May have short-term efficacy in low back pain                                             | Moderate          |
| Opioids                       | • Long-term data are lacking                                                                | Low               |
| Glucosamine                   | • Does not reduce low back pain from lumbar osteoarthritis at 6 months or 1 year           | 1A sufficient     |

Coxib = COX-2-specific inhibitor; TCA = tricyclic antidepressant

Management of Acute Low Back Pain

Clinical presentation: acute low back pain

History and examination

Red flags?

No

Consider differential diagnosis

Advise mobilization and avoidance of bed rest

Provide appropriate pain relief

Provide education and counsel on self-care

Yes

Investigation and management; consider referral

Review and assess improvement within 2 weeks

# Recommendations for Follow-Up of Patients with Acute Low Back Pain

<table>
<thead>
<tr>
<th>Patient Population</th>
<th>Frequency of Follow-up</th>
</tr>
</thead>
</table>
| All                                                               | • 2 weeks following initial visit  
• Follow-up options: telephone, e-mail or visit  
• Additional follow-up is indicated |
| Patients considered at high risk for chronic pain*                | • Earlier and more frequent visits may be appropriate                                   |
| Older patients or patients with:                                  | • Earlier and more frequent reassessment may be appropriate                             |
| • Progression of symptoms or lack of significant improvement      |                                                                                       |
| • Severe pain or functional deficit                               |                                                                                       |
| • Signs of nerve root disease or lumbar spinal stenosis           |                                                                                       |
| Patients referred for spinal manipulation, acupuncture or massage| • After 4 visits, refer patient to a specialist to determine if functionality has improved |

*See yellow flags; may also want to consider populations at risk if pain persists in the presence of adequate treatment: children and adolescents, women <30 years, men >60 years, patients with specific comorbidities (e.g., diabetes) and immunocompromised or immunosuppressed patients.

Follow-Up of Patients with Acute Low Back Pain

Review and assess improvement within 2 weeks

No improvement or deterioration

Assess risk of persistent disability
- Low risk
  - Refer to physiotherapist
  - Review within 12 weeks
    - No improvement: consider referral to specialist
    - Improvement: continue supportive management

- Medium risk
  - Consider referral if there is severe, refractory radicular pain/neurological deficit
  - Review within 12 weeks
    - Improvement: continue current management

- High risk
  - Refer for biopsychosocial assessment

Improvement
- Continue current management

Key Recommendations for Management of Acute Low Back Pain

### Level A (Consistent Evidence)
- Bed rest is **not recommended**
- nsNSAIDs/coxibs, acetaminophen and muscle relaxants are effective treatments for non-specific acute low back pain

### Level B (Inconsistent Evidence)
- Patient education is beneficial
- Spine stabilization may reduce recurrence and need for health care services
- Spinal manipulation and chiropractic techniques are **not recommended**

### Level C (Consensus)
- Red flags are common but do not necessarily indicate serious pathology
- Imaging is not indicated without findings suggestive of serious pathology

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Coxib = COX-2 inhibitor; nsNSAID = non-steroidal anti-inflammatory drug

Management of Persistent Low Back Pain*

Persistent low back pain

Signs and symptoms of nerve root disease or spinal stenosis?

No

Re-evaluate symptoms and risk factors, review diagnosis and consider referral and/or imaging studies

Consider alternative therapy (e.g., interdisciplinary approach incorporating pharmacological and non-pharmacological elements)

Review response

Yes

Consider referral and/or diagnostic MRI

Nerve root compromise or spinal stenosis?

No

Yes

Refer for specialist management

*American College of Physicians and the American Pain Society
Management of Low Back Pain*

- LOW BACK PAIN
  - Initiate treatment for a limited time
  - Follow up at 4 weeks; re-evaluate response to therapy
  - Did low back pain resolve without functional deficits?
    - Yes: Continue with self-care and re-evaluate at 1 month
    - No: Signs and symptoms of nerve root disease or spinal stenosis
      - Yes: Consider diagnostic MRI
        - Yes: Nerve root compromise or spinal stenosis?
          - Yes: Consider referring for surgery or other invasive procedures
          - No: Review response
        - No: Re-evaluate symptoms and risk factors, review the diagnosis and consider imaging studies
      - No: Consider alternative therapy (e.g., pharmacological and non-pharmacological approach, multidisciplinary)

*American College of Physicians and the American Pain Society; MRI = magnetic resonance imaging
# Recommended Interventions for Management of Low Back Pain*

*American College of Physicians and the American Pain Society

<table>
<thead>
<tr>
<th>Recommended treatment</th>
<th>Details</th>
<th>Duration of pain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Acute (&lt;4 weeks)</td>
</tr>
</tbody>
</table>
| **Self-care**        | • Advise patient to remain active  
                      | • Provide patients with books or pamphlets on back care  
                      | • Advise patients to apply heat | + | + |
| **Pharmacological**  | | + | + |
| **Non-pharmacological** | | + | + |
Recommended Interventions for Management of Low Back Pain*

<table>
<thead>
<tr>
<th>Pharmacological treatment</th>
<th>Duration of pain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acute (&lt;4 weeks)</td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>+</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>+</td>
</tr>
<tr>
<td>Muscle relaxants</td>
<td>+</td>
</tr>
<tr>
<td>TCAs</td>
<td></td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>+</td>
</tr>
<tr>
<td>Tramadol, opioids</td>
<td>+</td>
</tr>
</tbody>
</table>

*American College of Physicians and the American Pain Society
NSAID = non-steroidal anti-inflammatory drug; TCA = tricyclic antidepressant
Recommended Interventions for Management of Low Back Pain*

<table>
<thead>
<tr>
<th>Non-pharmacological treatment</th>
<th>Duration of pain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acute (&lt;4 weeks)</td>
</tr>
<tr>
<td>Spinal manipulation</td>
<td>+</td>
</tr>
<tr>
<td>Therapy with exercise</td>
<td></td>
</tr>
<tr>
<td>Massage</td>
<td></td>
</tr>
<tr>
<td>Acupuncture</td>
<td></td>
</tr>
<tr>
<td>Yoga</td>
<td></td>
</tr>
<tr>
<td>Cognitive behavioral therapy</td>
<td></td>
</tr>
<tr>
<td>Progressive relaxation</td>
<td></td>
</tr>
<tr>
<td>Intensive interdisciplinary rehabilitation</td>
<td></td>
</tr>
</tbody>
</table>

*American College of Physicians and the American Pain Society
## Follow-up/Monitoring of Patients with Acute or Chronic Low Back Pain

<table>
<thead>
<tr>
<th>Patient population</th>
<th>Frequency of follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable</td>
<td>As needed</td>
</tr>
<tr>
<td>Fluctuating pain</td>
<td>Periodically</td>
</tr>
<tr>
<td>On pharmacological treatment</td>
<td>Periodically</td>
</tr>
</tbody>
</table>

# Therapeutic Recommendations for Management of Low Back Pain

<table>
<thead>
<tr>
<th>Non-specific Low Back Pain</th>
<th>Radicular Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute</strong></td>
<td></td>
</tr>
<tr>
<td>• Acetaminophen</td>
<td>If radicular pain is prominent consider addition of:</td>
</tr>
<tr>
<td>• nsNSAIDs/coxibs</td>
<td>• $\alpha^2\delta$ ligands</td>
</tr>
<tr>
<td>• Co-prescribe PPI for patients aged &gt;45 years</td>
<td>• TCAs</td>
</tr>
<tr>
<td>• Weak opioids</td>
<td></td>
</tr>
<tr>
<td>• Muscle relaxants</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refer to specialist for:</td>
</tr>
<tr>
<td>• Cognitive behavioral therapy</td>
</tr>
<tr>
<td>• Complex pharmacological management, including opioids and neuropathic pain medications</td>
</tr>
<tr>
<td>• Consider interventional pain therapies</td>
</tr>
<tr>
<td>• Consider surgery</td>
</tr>
</tbody>
</table>

Coxib = COX-2-specific inhibitor; nsNSAID = non-selective non-steroidal anti-inflammatory drug; PPI = proton pump inhibitor; TCA = tricyclic antidepressant

Adherence
Strategies to Improve Adherence

- Simplify regimen
- Impart knowledge
- Modify patient beliefs and human behavior
- Provide communication and trust
- Leave the bias
- Evaluate adherence

Simplifying Medication Regimen

• If possible, adjust regimen to minimize:
  – Number of pills taken
  – Number of doses per day
  – Special requirements (e.g., bedtime dosing, avoiding taking medication with food, etc.)

• Recommend all medications be taken at the same time of day (if possible)
• Link taking medication to daily activities, such as brushing teeth or eating
• Encourage use of adherence aids such as medication organizers and alarms

Imparting Knowledge

• Provide clear, concise instructions (written and verbal) for each prescription
• Be sure to provide information at a level the patient can understand
• Involve family members if possible
• Provide handouts and/or reliable websites for patients to access information on their condition
• Provide concrete advice on how to cope with medication costs

# Modifying Patient Beliefs and Behaviors: Motivational Interviewing Technique

<table>
<thead>
<tr>
<th>Techniques</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Express empathy</td>
<td>• “It’s normal to worry about medication side effects”</td>
</tr>
<tr>
<td>• Develop discrepancy</td>
<td>• “You obviously care about your health; how do you think not taking your pills is affecting it?”</td>
</tr>
<tr>
<td>• Roll with resistance</td>
<td>• “I understand that you have a lot of other things besides taking pills to worry about”</td>
</tr>
<tr>
<td>• Support self efficacy</td>
<td>• “It sounds like you have made impressive efforts to work your new medication into your daily routine”</td>
</tr>
</tbody>
</table>

Providing Communication and Trust: Communication Tips

• Be an active listener
  – Focus on the patient
  – Nod and smile to show you understand

• Make eye contact

• Be aware of your own body language
  – Face the patient
  – Keep arms uncrossed
  – Remove hands from pockets

• Recognize and interpret non-verbal cues

Acknowledging biases

Learn more about how low health literacy can affect patient outcomes

Specifically ask about attitudes, beliefs, and cultural norms with regards to medication

Tailor communication to patient’s beliefs and level of understanding
Evaluating Adherence: 4-Step Strategy for Detecting Non-adherence

1. Ask an open-ended question about taking medicine

2. Normalize and universalize non-adherence to reverse the judgmental environment

3. Make the role of accurate information about adherence in medical decision-making explicit

4. Don’t ask about “forgetting” or “missed” doses until the first 3 steps have set the stage

Summary
Management of Low Back Pain: Summary

• An interdisciplinary approach should be used to address pain
  – Include patient education and non-pharmacological therapies

• Patients with acute low back pain should return to activity promptly and gradually
  – Bed rest is discouraged

• Supervised exercise and cognitive behavioral therapy may be useful for chronic low back pain

• Pharmacotherapy for acute low back pain may include acetaminophen, nsNSAIDs/coxibs, weak opioids and/or muscle relaxants
  – Addition of α2δ ligands or TCAs should be considered if radicular pain is present

• Patients with longer duration of low back pain should be assessed for neuropathic and central sensitization/dysfunctional pain
  – These patients may require referral to a specialist

Coxib = COX-2-specific inhibitor; nsNSAID = non-steroidal anti-inflammatory drug; TCA = tricyclic antidepressant