



## Back Pain

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## Epidemiology of Low Back Pain

- Back pain: second most common cause of disability in the US (leading cause among men) in 1999<sup>1</sup>
- Workers' compensation 1988-1996<sup>2</sup>
  - Only 4.6%-8.8% of claims over 1 year were for low back pain (LBP)
  - But represented 64.9%-84.7% of annual costs

1. CDC. *MMWR*. 2001;50:120-125.  
2. Hashemi L et al. *J Occup Environ Med*. 1988;40:110-119.

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## Most Common Diagnosis

<p style="text-align: center;"><b>Age 17- 44</b></p> <ol style="list-style-type: none"><li>1. General medical exam</li><li>2. Pregnancy care</li><li>3. Acute URI</li><li>4. Vaginitis</li><li>5. Contraception</li><li>6. Low back pain</li></ol>	<p style="text-align: center;"><b>Age 45- 64</b></p> <ol style="list-style-type: none"><li>1. General medical exam</li><li>2. Hypertension</li><li>3. Acute URI</li><li>4. Diabetes</li><li>5. Low back pain</li></ol>
<p style="text-align: center;"><b>Age &gt;65</b></p> <ol style="list-style-type: none"><li>1. Hypertension</li><li>2. General medical exam</li><li>3. COPD</li><li>4. CAD</li></ol>	<ol style="list-style-type: none"><li>5. URI</li><li>6. Diabetes</li><li>7. Arthritis</li><li>8. Low back pain</li></ol>

Blount, et al *J Am Board Fam Pract* 1999;6:143-52

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## Sources of Low Back Pain

- Superficial somatic
- Deep somatic
  - Muscle, joint, tendon, bursa
- Radicular – nerve root
- Visceral referred – sympathetic afferents
- Neurogenic
  - Mixed motor sensory nerves
- Psychogenic – cerebral cortex

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## How Confident of Diagnosis?

- 605 Washington State family practitioners when they began to practice:
  - 42% felt poorly trained to manage low back pain

Cherkin D. West J Med 1988;149:475-480

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## Making the Diagnosis

“Up to 85% of pts cannot be given a definitive diagnosis because of weak associations among symptoms, pathological changes, and imaging results.”

Deyo R, et al. JAMA 1992; 268:760-765

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## Mechanical Low Back Pain

“Many, including myself, believe the character of the vast majority (possibly as many as 97%) of low back disorders to be mechanical.”

Donelson R. *J Musculoskel Med* 1991;8:14-29

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## What About X-Rays?

“Only in pts <20 or >50-60 are X-rays obtained within the 1<sup>st</sup> months. For the rest, no X-rays are considered necessary until 2 months have elapsed and the pt still has pain.”

Nachemson A. *Clinical Orthopedics and Related Research* 1983;179:77-85

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## Red Flags

- Age >50
- Significant trauma
- Neurologic deficit
- Weight loss (unexplained)
- Substance abuse
- Ankylosing spondylitis
- Malignancy Hx
- Systemic steroids
- Fever ( $\geq 100$ )
- Persistent pain
- Compensation Issues

Deyo RA. *J Gen Int Med* 1986;1(20)

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### Waddell Signs ( $\geq 3$ )

- Nonspecific tenderness: inappropriate superficial tenderness to light palpation along spine
- Simulation test: LS pain upon axial loading or simulated rotation
- Distraction: Supine SLR  $\neq$  Sitting SLR
- Nonanatomic neurologic findings
- Over-reaction: e.g., grimacing, collapsing

Daniels JM Treatment of Occupationally Acquired LBP  
*Am Fam Phys* 1997;55(2):588-596

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### Natural History

Time Point	Resolution Rate
0 weeks (Acute LBP)	100%
3 weeks	70% Resolved
12 weeks	90% Resolved

Nachemson A. Spine 1976;1:59-71

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### Bed Rest vs Exercises vs Ordinary Activity

- 186 acute low back patients
- 2 days bed rest vs PT vs 'activities as tolerated'

Malmivaara A, Hakiinen U, Aro T, et al. "The Treatment of Low Back Pain" *N Engl J Med* 1995;332:351-355

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### Bed Rest vs Exercises vs Ordinary Activity

“... continuing ordinary activities within the limits permitted by the pain leads to more rapid recovery than either bed rest or ...exercises.”

Malmivaara A, Hakiinen U, Aro T, et al. "The Treatment of Low Back Pain" *N Engl J Med* 1995;332:351-355

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### The Quebec Task Force on Spinal Disorders

- Review of randomized controlled trials:
  - No convincing evidence that strengthening or stretching exercise is efficacious
  - No convincing evidence for TENS

"Scientific Approach to the Assessment and Management of Activity-Related Spinal Disorders. A Monograph for Clinicians." *Spine* 1987;12(Suppl):522-30

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### Flexion Activity and LBP

“All flexion of the back should be avoided”

Nachemson A. *Clin Orth Rel Research* 1983;179(October):77-85

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## Williams Flexion Exercises

“ Knee to chest and partial sit-up exercises may actually slow recovery”

Bigos S “Acute Care to Prevent Back Disability” Clin Ortho and Related Res. 1987;221 (August):121-130

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## McKenzie Method

- 89 patients Mckenzie vs back school education program
- McKenzie Favorable Outcomes (p <0.05)
  - fewer LBP recurrences
  - fewer episodes of sick leave

Stankovic, Radisav Spine Vol 20, #4, pp469-472, 1995

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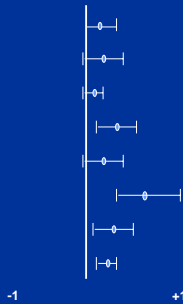
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## Manipulation

Bergquist-Ullman  
Waterworth  
Mathew  
Farrell  
Godfrey  
Rasmussen  
Cowyer  
Meta-analysis



Shekelle P, et al Ann Int Med 1992;117:590-598

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## Medications in Primary Care<sup>1</sup>

- NSAID alone 34.7%
- NSAID + MR 24.2%
- No meds 20.5%
- Other 6.9%
- NSAID + opioid 4.1%
- MR alone 3.7%
- MR + opioid 3.2%
- All 3 Rx 2.7%

Combination of NSAID + MR provided best outcomes.

<sup>1</sup> Cherkin DC et al. *Spine* 1998; 23: 607-14.

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## Acetaminophen

- Benefits
  - First-line OTC analgesic and antipyretic agent
  - Safe up to doses of 4g/d
  - Mild-to-moderate pain states
  - First-line therapy
  - Few side effects
- Liver and kidney toxicity

American College of Rheumatology Subcommittee on Osteoarthritis. *Arthritis Rheum.* 2000;43(9):1905-1915.  
Lipetz JS, et al. *Occup Med.* 1998 Jan-Mar;13(1):151-166.  
Power L, et al. *Surg Clin North Am.* 1999 Apr;79(2):275-295.

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## Nonsteroidal Anti-inflammatories

- Benefits
  - Nonspecific analgesic effect
  - Anti-inflammatory
  - Add on therapy to acetaminophen
- Renal, cardiovascular, GI
  - 16,000 deaths annually

Singh G, et al. *Arch Intern Med.* 1996;156:1530-1536.  
Singh G, et al. *J Rheumatol.* 1999;26:18-24.  
Laukai EN, et al. *J Clin Gastroenterol.* 1989;11:158-162.

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### Pain Management & End-of-Life Care in California's Regulatory Environment

January 7-8, 2005 / Disneyland Hotel, Anaheim

Sponsored by California Medical Association and UC Davis Health System Continuing Medical Education

in cooperation with The City of Hope Cancer Center and UC Irvine College of Medicine CME

## Tramadol

- Non-narcotic, nonscheduled synthetic opioid
- Randomized trials show effectiveness in:
  - Osteoarthritis
  - Back pain
  - Dental pain
  - Fibromyalgia
  - Diabetic neuropathy

Ultracet Product Bulletin, 2002, American Pharmaceutical Association, Katz WA. *Drugs*, 1996;52 Suppl 3:39-47.  
Medve RA, et al. *Anesth Prog*, 2001, 48:79-81. Moreland LW, et al. *Rheum Dis Clin North Am*, 1999;25:153-159.  
Bassi G, et al. *Int J Clin Pharmacol Res*, 1998;18:13-19. Harati Y, et al. *Neurology*, 1998;50:1842-1846. Schmitzer TJ,  
et al. *J Rheumatol*, 2000;27:772-778.

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## Opioid Analgesia

- Severe pain, short-term
- Not anti-inflammatory
- Long-term use limited by side effects
  - sedation
  - abuse
  - constipation

Jacox A, et al. Clinical Practice Guidelines No. 9, US Department of Health and Human Services, Agency for Health  
Care Policy and Research, 1994. Moreland LW, et al. *Rheum Dis Clin North Am*, 1999;25:153-159.

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## Adjuvants: Muscle Relaxants

- MRs may promote healing by facilitating movement
- MRs may reduce the length of the acute stage
  - May prevent the development of an acute injury into a chronic condition
- Effective alone or in combination with NSAIDs

Hendler N. Postgraduate Healthcare, 3M Pharmaceuticals, 1996.  
Fathie K, et al. Treatment of acute back pain: an interdisciplinary approach  
Available at: <http://www.musculoskeletalpaininstitute.com>.  
Elenbaas JK. *Am J Hosp Pharm*, 1980;37:1313-1323.  
Borenstein DG, et al. *Clin Ther*, 2003 Apr;25(4):1056-1073  
Browning R, et al. *Arch Intern Med*, 2001;161:1613-1620.

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## Muscle Relaxants: Origin of Skepticism

- Do muscle relaxants relax muscles or simply sedate?
- Muscle spasm is considered a normal and protective injury response
- Belief that blockade of spasm may return patient to excess activity prematurely, potentially leading to further injury

Littrell RA et al. *South Med J.* 1993;86:753-756.

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## Centrally Acting Muscle Relaxants

Advantages	Disadvantages
Analgesic	Sedation
Reduce pain-causing muscle spasms, hypertonicity, and rigidity	Anticholinergic
Short-term use does not cause complications, blood dyscrasia, or kidney problems	Dizziness
Adjunctive therapy	Perceived abuse potential

- Carisoprodol
- Cyclobenzaprine
- Metaxalone
- Methocarbamol

Fathie K et al. Available at [www.musculoskeletalpaininstitute.com](http://www.musculoskeletalpaininstitute.com).  
*Physicians' Desk Reference*, 57th ed. Montvale, NJ: Medical Economics Company, Inc, 2003.

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## Role of Sedation

All muscle relaxants are sedating but variable

- Limited and contradictory data
  - Sedation 39% with cyclobenzaprine, but only 16% in post-marketing surveillance program

*Physicians' Desk Reference*, 2002.

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### Role of Sedation

- Prescribed only at night, which in turn diminishes their efficacy
- All MRs are sedating, sedation is not necessarily their mode of action

Physicians' Desk Reference, 2002.

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### Habit-Forming Perceptions of Muscle Relaxants

- Abuse potential of MRs vary tremendously
- Often assumed to cause dependency
- Perceptions of abuse based largely on studies of carisoprodol, which have demonstrated abuse potential<sup>1,2</sup>

1. Reeves RR et al. *J Addict Dis.* 1999;18:51-56.  
2. Bailey DN, Briggs JR. *Am J Clin Pathol.* 2002;117:396-400.

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### Combination Therapy: MR and NSAIDs

- Cyclobenzapine 10 mg tid vs Cyclobenzapine + Naproxen 250 mg qid
- Spasm, tenderness, pain, functional capacity
- Results: combination better for spasm, tenderness, ROM, pain, functional capacity ( $p < 0.05$ )

Borenstein DG, Lacks S, Wiesel SW. *Clin Therap* 1990;12 (2):125-131

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## Conclusions

- Acute musculoskeletal pain is common
  - Accounts for many physician visits
  - Significant impact on patients
  - High societal costs
- Important to diagnose cause and treat underlying condition

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## Conclusions

- Encourage activity as tolerated
- Discourage prolonged bed rest
- Promote physical fitness to prevent recurrence
- Spinal manipulation - 1<sup>st</sup> month of symptoms

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## Conclusions

- Acetaminophen first-line agent for pain
- NSAID
- Tramadol
- Short-term opioids for severe symptoms
- Muscle relaxants
- Combination therapy

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