RED FLAGS IN LOW BACK PAIN

NAOEM
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Dianna Chamblin, MD
LOW BACK PAIN: FIRST THE BAD NEWS
Leading cause of disability in the US as of 2010.

~80% of adults will have LBP at some point in their life, 20-30% at any given time.

Total direct health care costs attributable to LBP in US $26.3 billion in 1998.

In 2010, King County self-insured health plan spent >$31 million.

In 2011, Costco Wholesale spent $124 million on musculoskeletal and connective tissue conditions.

Indirect costs related to days lost from work $$.

80% of total costs are incurred by 6-20% who become disabled.
A leading cause of work-related disability and workers’ compensation for people <45 years.

Affects about two-thirds of all adults at some point in time.

Initial episodes of acute low back pain are likely to improve within 6 weeks without medical intervention, however, a substantial fraction of persons will go on to have more persistent back problems.
Medical costs associated with back pain are in excess of $25 (< $158?) billion per year, and employers also face huge costs in lost productivity and disability payments.

In the early 1990s, the U.S. had the highest rate of spine surgery of all industrialized nations with a rate five times that of Great Britain.
Dartmouth Atlas Project data 2006:

- Considerable regional variation in back surgery rates. The national average rate of spine surgery was 4.0 per 1,000 in 2003, ranging from 1.6 per 1,000 enrollees to 9.4.
- Washington had the 14th highest back surgery rate of all states.
- The Seattle Hospital Region had a spine surgery rate of 4.27 per 1,000 Medicare enrollees compared to a U.S. rate of 3.97.
- Seattle’s lumbar discectomy/laminectomy rate per 1,000 Medicare enrollees was 2.66 compared to a U.S. rate of 2.13, while the lumbar fusion rate was 0.85 per 1,000 enrollees compared to a U.S. rate of 1.02.

Approximately 5% of all injured workers will be off work for at least 6 months and suffer chronic disability.

In the aggregate this long-term disability (LTD) accounts for over 1.6 million lost work days annually in Washington State.
LONG TERM DISABILITY

- A patient who has been on time-loss for three months, has a 50% probability that he/she will still be on time-loss at one year.

- **Critical need:** to identify and attend to the patient’s medical and RTW needs within the first month after injury.
THE GOOD NEWS!

- Prognosis for acute low back pain is good.

- Almost 90% of patients seeking care within 3 days of onset recover within the first two weeks.

- Even radiculopathy or sciatica 1/3 better in two weeks and 75% in three months.
RISK FACTORS FOR LOW BACK PAIN

- Smoking
- Obesity
- Age
- Female gender
- Physically strenuous work
- Sedentary work
- Psychologically strenuous work
- Low educational attainment
- Workers’ compensation insurance
- Job dissatisfaction
- Psychological factors

UpToDate review 9/9/15
## Psychosocial factors associated with persistent low back pain

<table>
<thead>
<tr>
<th>General or work-related beliefs</th>
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<tbody>
<tr>
<td>Belief that pain and activity are harmful</td>
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<tr>
<td>Fear avoidance behavior (avoidance of activities due to fear of increased pain)</td>
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<tr>
<td>Catastrophizing (excessive focus on pain and feeling of helplessness to control pain)</td>
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<tr>
<td>Expectation that passive treatments/rehabilitation will work</td>
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<td>Expectation of increased pain with return to work or activity</td>
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<table>
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<th>Work-related factors</th>
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<tr>
<td>Poor control of one's job environment</td>
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<td>Low job satisfaction</td>
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<td>Short job attachment (recent hire)</td>
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<td>Limited work skills/experience</td>
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<tr>
<td>Prior workers' compensation claim or time off work due to injury</td>
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<td>Litigation case (attorney involved)</td>
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<td>Physically demanding work</td>
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<table>
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<th>Other affective factors</th>
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<tr>
<td>Depression or mood symptoms</td>
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<tr>
<td>Anxiety symptoms</td>
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<tr>
<td>Substance abuse</td>
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<tr>
<td>Socially withdrawn (lack of family/social support)</td>
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Evaluation and history
Rule out Red Flags
Surgery referral indications
Educate (reassure?) the patient
EVALUATION OF LBP

- History
- Symptoms
- Signs
- Red flags??
- Spinal cord or cauda equina compression: trauma, metastatic cancer epidural abscess/hematoma, massive disc herniation.
  - Pain, weakness or sensory findings. Saddle anesthesia?
  - Bowel and/or bladder dysfunction generally late findings.
- Significant and or progressive neurological deficit
- Current or recent cancer history
- High risk for cancer or remote history of cancer
- Signs/Symptoms/risk factors for spinal injection: Fever, history of IVDU, recent infection, hemodialysis or immunosuppression
- Risk for vertebral compression fracture
  - >70 yo,
  - chronic systemic glucocorticoid use,
  - significant trauma, or
  - mild trauma with possible osteoporosis
- Upper motor neuron findings [suggestive of brain or spinal cord involvement]

- Major trauma [e.g. MVA, fall from height]

- Minor trauma or strenuous lifting in a person age <20 yrs or > 70 yrs or with osteoporosis

- Possible tumor, history of cancer, constitutional symptoms or risk factors for spinal infection [e.g., recent bacterial infection (such as urinary tract infection) intravenous drug abuse, immune suppression as a result of steroid use, transplant, HIV, etc.]

- Pain that worsens when lying on the back or severe nighttime pain
- Clues
PHYSICAL EXAMINATION

- **Back:** posture,
  - Appearance: scoliosis, excessive kyphosis or lordosis
  - Palpation/percussion: tenderness over spine, pelvis, SI area or soft tissue or CVA, palpable step-off
- **Maneuvers**
  - Straight leg raising or Laseque’s sign: patient supine. Examiner raises patient’s extended leg on symptomatic side with foot dorsiflexed. Positive when radicular pain worse
  - Crossed straight leg raise: more specific than SLR for radiculopathy, raising of unaffected leg causes pain on symptomatic side.
  - Patrick’s test or **FABERE** test: Flex, Abduct, External Rotate and Extend the affected leg. Suggests hip disease, iliopsoas spasm or SI disease. Positive when unable to lower leg parallel to uninvolved leg
PHYSICAL EXAM FINDINGS

- Extremities: muscle atrophy, fasciculations, pulses
- Abdomen: pulsatile masses, distended bladder
- Neurological exam:
  - Sensation
  - Strength
  - Reflexes:
    - Patellar: mostly L4, but also L2-3
    - Achilles: S1
    - Plantar response: up going response suggests cord or brain, i.e. upper motor neuron response
MANAGEMENT W/O RED FLAGS

- Conservative care for 4-6 weeks
- Support activity and function
- Avoid imaging unless...
Fails 4-6 weeks of conservative care
Or has radicular (leg) component and steroid injection considered
Or develops progressive neurological symptoms
### Figure 2: Washington State Performance for Commercially Insured as Compared To NCQA National Benchmarks.

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<tr>
<th>Measure</th>
<th>State Rate</th>
<th>NCQA National 90th Percentile *</th>
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<tr>
<td>Between NCQA National 75th and 90th Percentile</td>
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<tr>
<td>Avoidance of antibiotic treatment in adults with acute bronchitis</td>
<td>31%</td>
<td>38%</td>
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<tr>
<td>Avoidance of antibiotics for common cold</td>
<td>92%</td>
<td>95%</td>
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<tr>
<td>Avoidance of x-ray, MRI and CT scan for low back pain</td>
<td>81%</td>
<td>83%</td>
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### Figure 3: Washington State Performance for Medicaid Insured as Compared To NCQA National Benchmarks.

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<tr>
<td>Between NCQA National 75th and 90th Percentile</td>
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<tr>
<td>Screening for cervical cancer</td>
<td>69%</td>
<td>73%</td>
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<tr>
<td>Avoidance of x-ray, MRI and CT scan for low back pain</td>
<td>79%</td>
<td>83%</td>
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* NCQA Benchmark Source: NCQA National Commercial All Lines of Business (LOBs) Quality Compass® 2015

** The state rate for this measure is based upon Quality Compass® 2015. All other state rates in these tables are based upon results produced by the Washington Health Alliance using its own database.

The source for benchmark data contained in this publication is Quality Compass® 2015 and is used with the permission of the National Committee for Quality Assurance (“NCQA”). Any analysis, interpretation, or conclusion based on these data is solely that of the authors, and NCQA specifically disclaims responsibility for any such analysis, interpretation, or conclusion. Quality Compass is a registered trademark of NCQA.
Defer X-ray after a trial of therapy with or without ESR:

- consider AP and lateral view for most. Flexion/extension if palpable step-off or prior lumbar fusion.
- may be helpful after a trial of therapy in patient with weaker risk factor for cancer (unexplained weight loss or age > 50 years)
- risk factors for ankylosing spondylitis (morning stiffness that improves with exercise, back pain awakening at night or younger age 20 to 40 y),
- risk for vertebral compression fracture: history of osteoporosis, glucocorticoid use, significant trauma, older age (> 65 for men or > 75 for women)
Advanced imaging:

- MRI usually imaging modality of choice.
  - More sensitive and specific than X-ray for infection and malignancy. MRI recommended after trial of therapy in patients with sign/symptoms of radiculopathy who are candidates for surgery or ESI. Also recommended in patients with risk factors for or symptoms of symptomatic spinal stenosis (radiating leg pain, older age or pseudo claudication) in patient who are candidates for surgery. Evaluates discs, nerve roots, epidural fat and shape/size of spinal canal.
  - CT if MRI not available or recommended due to implant.

*CT More accurate than plain X-rays and MRIs to assess spinal column injury/fractures.
Risk factor assessment can almost always identify patients who require imaging.

The prevalence of serious underlying conditions is low in patients without risk factors.

The natural history of acute low back pain is quite favorable, but patients require reevaluation if they are not better after about one month.

Routine imaging does not improve clinical outcomes but increases costs and may lead to potentially unnecessary invasive treatments, such as surgery.

Imaging abnormalities are extremely common, especially in older adults, but most are poorly correlated with symptoms.

In most cases, treatment plans do not change after imaging studies.

Back imaging is associated with radiation exposure, which can increase the risk for cancer in the case of lumbar radiography and CT.

OTHER: LABS...EMG

- Labs: Usually are not needed unless considering malignancy or infection: ESR, CRP

- EMG/NCVs
  - provides physiological information that may complement the anatomic information provided from MRI.
  - May be helpful in radiculopathy, clarify old vs new axon loss nerve damage. Acute EMG findings present after 3 weeks.
  - may identify conditions that mimic radiculopathy such as mononeuropathies or lumbosacral plexopathy.
TREATMENT

- Promote function, **not bedrest**.
- Address sleep issues
**NSAIDs or acetaminophen** first line for pain

- **NSAIDS**
  - One not more effective than other
  - Selective COX-2 inhibitors perhaps fewer side effects. However, increased CV risks.

Roelofs PD, Deyo RA, Koes BW, Scholten RJ, van Tulder Cochrane Database Syst Rev. 2008;

- **Acetaminophen** may provide relief
  - Beware of hepatotoxicity. Usually dose related and increases if patient using alcohol.
  - If history of heavy alcohol use or other risk factors limit to 2 gm per day.

**Glucocorticoids:** Limited studies to support use.

**Muscle relaxants:** can be helpful acutely. Adverse effects from sedation. Suggest cyclobenzaprine or methocarbamol. Limit < 3 weeks.

- carisoprodol, Soma, not advised, due to risk of abuse. First metabolite=meprobamate
- Benzodiazepines not advised due to risk of abuse (e.g. valium)
- Tizanidine interacts with CYP1A2 inhibitors (flouroquinolones, amiodarone, mexiletine, verapamil, cimetidine, famotidine, oral contraceptives, acyclovir, propafenone, ticlopidine)

  - Monitor LFTs
Patients prescribed narcotics for acute back pain during the first week have a higher incidence of time loss and long term disability.


Over 60% of patients taking opioids for at least 3 months are still on opioids 5 years later.

Journal of General Internal Medicine 2011;26:1450-7
Opioids for moderate to severe pain due to adverse risks. Limit to bedtime use or short term use.
PHYSICAL MODALITIES

- Exercise may be helpful. Encourage walking and return to normal activities. Value of early PT unclear.
- Spinal manipulation may be as effective as conventional medical therapy. Duration unclear.
- Massage and yoga may be of benefit.
- Acupuncture and dry needling: limited data in LBP. Acupuncture may be helpful in chronic back pain.
- Heat > cold.
- Corsets, traction, back braces: no data to support.
INJECTIONS

- Trigger point injections: limited data
- Epidural steroid injections
Surgery?

- Urgent
  - Progressive neurological deficit, B/B involvement
  - Instability
  - Etc. red flags

Non-urgent.....
Physiatry visit required prior to surgeon (non-urgent spine related pain or disability)

Researchers compared utilization rates between 2006-2007 and 2008-2010:

Results:
- 70% increase physiatry referrals
- 48% decrease in surgical referrals
- 29% decrease in spinal surgeries
- 18% decrease in spinal imaging.

Total spine care costs dropped 12%.
WHAT CAN YOU DO?

- Think prevention “Use your Head before your Back”
- Recommend knowledgeable providers
- Keep patient at work or maintain connectivity with employer
- Minimize risk factors for disability
- Counsel patients on the benefits of activity and return to work.
- Avoid iatrogenic disability
  - Prolonged opioids
  - Bedrest, ongoing activity limitation
  - Use of terminology...
Describes a symptom or illness brought on unintentionally by something that a doctor does or says.
Please note: the following findings are commonly seen in patients without low back pain:

*Disc degeneration (91%)*
*Disc signal loss (83%)*
*Disc height loss (56%)*
*Disc bulge (64%)*
*Disc Protrusion (32%)*
*Annular high signal intensity zone (38%)*

Reference: Jarvik et al, Spine 2001
Please note: the following findings are commonly seen in patients without low back pain:

Disc degeneration (91%) = Gray hairs of the spine. Part of the aging process
Disc signal loss (83%) = same
Disc height loss (56%) = same
Disc bulge (64%) = same
Disc Protrusion (32%)
Annular high signal intensity zone (38%) = Part of aging process
EARLY RETURN TO WORK

Probability of Return to Work after Time Loss
(Industrial Indemnity Study)

- 30% (To Same Job)
- 50% (To Any Job)
- 10% (To Any Job)
- 0% (To Any Job)

TIME OFF WORK

- 2 Months
- 6 Months
- 12 Months
- 24 Months