My Aching Back - Updated Guidelines for the Treatment of Low Back Pain

Danielle Cooley, DO
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Dates and Location of CME Activity: March 22-25, 2018 – JW Marriott

Name of Faculty/Moderator: Danielle Cooley DO

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NO LATER THAN JANUARY 19, 2018
My Aching Back- Updated Guidelines for the Treatment of Low Back Pain

Danielle Cooley, DO
Chair of OMM, Associate Professor
Family, Medicine, OPP, RowanSOM

Learning Objectives

• Recognize the current guidelines for the treatment of low back pain
• Identify an osteopathic manipulative treatment regimen for the treatment of low back pain
• Demonstrate approaches to prevent their own low back pain while care for patients with pain
Epidemiology¹

• 2\textsuperscript{nd} most common reasons for physician visits (URI is 1\textsuperscript{st})
• 8 out of 10 Americans will have back problems in their lifetimes
• Number of adults experiencing back pain on the rise (80% will experience back pain in their lifetime)
• More common in women

Epidemiology²⁻⁴

• ¼ US Adults report back pain lasting at least one day in the past 3 months
• High costs- both direct and indirect
• Total Costs- $100-200 billion annually (2/3 indirect cost)
• 149 million days of work per year are lost
Epidemiology$^{2,3}$

- 80% of population will experience low back pain
- 95% of those will recover, rest will become chronic pain

Classification$^{1,2,4}$

- Acute- less than 4 weeks
- Subacute- 4-12 weeks
- Chronic- more than 12 weeks
Classification$^2$

- Duration of symptoms
- Potential cause
- Presence or absence of radicular symptoms
- Corresponding anatomical or radiographic abnormalities

Epidemiology$^2$

- Most are self-limited
- Many do not seek medical care
- Pain, disability, and return to work improve rapidly in the 1$^{st}$ month
- 1/3 persistent pain 1 year after acute episode
- 1 in 5 – substantial limitations in activity
Clinical Guideline for Low Back Pain

Benefits and Comparative benefits of Pharmacologic Therapies
Acute or Sub-acute Low Back Pain

- **Acetaminophen**
  - No difference vs Placebo or NSAIDs

- **NSAIDS**
  - Small improvement in pain intensity
  - Small increase in function compared with placebo, no difference in COX-2 selective vs traditional NSAIDs

- **Skeletal Muscle Relaxants**
  - Improved pain after 2-4 and 5-7 days

- **Systemic Corticosteroids**
  - No improvement in pain or function of IM methylprednisolone or 5 day course of prednisolone
Acute or Sub-acute Low Back Pain$^{2,5}$

- **Other Therapies**
  - Evidence insufficient to determine effectiveness of antidepressants, benzodiazepines, anti-seizure medications or opioids vs placebo

Chronic Low Back Pain$^{2,5}$

- **NSAIDs**
  - small to moderate improvement in pain

- **Opioids**
  - strong opioids (tapentadol, morphine, hydromorphine, and oxymorphone) small improvement in pain and function
  - No difference among difference long-acting opioids for pain or function
  - Tramadol had moderate pain relief and small improvement in function
Chronic Low Back Pain\textsuperscript{2,5}

- **SMRs**
  - Insufficient evidence vs placebo

- **Benzodiazepines**
  - Tetrazepam improved pain relief at 5-7 days, overall improvement 10-14 days

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Chronic Low Back Pain\textsuperscript{2,5}

- **Antidepressants**
  - No difference in pain b/t TCAs or SSRIs, duloxetine—small improvement in pain intensity and function

- **Other Therapies**
  - Insufficient (acetaminophen, systemic corticosteroids, or anti-seizure medications)
Radicular Low Back Pain\textsuperscript{2,5}

- Benzodiazepines
  - no difference in function at 1 week through 1 year

- Systemic Corticosteroids
  - no difference in pain, no to small effect on function

- Other Therapies
  - NSAIDs inconsistent for pain

Harms of Pharmacologic Therapies\textsuperscript{2}

- More adverse effects with NSAIDs than placebo
- Short-term use of opioids increased nausea, dizziness, constipation, vomiting, somnolence, and dry mouth
- SMRs increased risk of adverse event and sedation
Harms of Pharmacologic Therapies

- Anti-depressants increased risk of adverse events
- No difference b/t duloxetine and placebo for risk of serious adverse event
- Benzodiazepines caused more frequent somnolence, fatigue, and lightheadedness

Comparative Benefits of Non-pharmacologic Therapies
Acute or Sub-acute Low Back Pain$^{2,5}$

• **Exercise**
  – Inconsistent results, no difference b/t different exercise regimens

• **Acupuncture**
  – Small decrease in pain intensity, slight increase in likelihood of overall improvement

Acute or Sub-acute Low Back Pain$^{2,5}$

• **Massage**
  – Moderately improved short-term (1 week) pain relief and function
  – Better results when combined with another intervention (exercise, exercise and education, or usual care)
Acute or Sub-acute Low Back Pain\textsuperscript{2,5}

- **Spinal Manipulation**
  - Small effect on function, better long term pain relief
  - Combined with exercise, improved function at 1 week

- **Superficial Heat**
  - Moderate improvement in pain relief and disability
  - Combined with exercise, improved function at 7 days
  - More pain relief and function compared with acetaminophen or ibuprofen after 1-2 days

- **Low-Level Laser Therapy**
  - Combined with NSAIDs – large decrease in pain intensity and moderate improvement in function

- **Lumbar supports**
  - No difference in pain or function

- **Other Therapies**- insufficient evidence
  - TENS, inferential therapy, short-wave diathermy, traction, Pilates, Tai chi, yoga, ultrasound, taping, superficial cold
Chronic Low Back Pain$^{2,5}$

- **Exercise**
  - Improvement in pain relief and function

- **MCE**
  - Decreased pain scores and improved function in short to long term follow up
  - Improvement in function

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Chronic Low Back Pain$^{2,5}$

- **Pilates**
  - No effect on pain or function

- **Tai Chi**
  - Moderate pain improvement and increase in function

- **Yoga**
  - Pain improvement and improved function
Chronic Low Back Pain\textsuperscript{2,5}

- **Psychological Therapies**
  - Progressive relaxation therapy - improved pain intensity and function
  - EM biofeedback - decreased pain
  - Behavioral therapy with reinforcement - decreased pain
  - CBT - decreased pain
  - Mindfulness-based stress reduction - improved pain and function

- **Multidisciplinary Rehabilitation**
  - Decreased pain intensity (short and long term), disability, and improved function and return to work

- **Acupuncture**
  - Lower pain intensity and improved function

- **Massage**
  - Decreased pain and improved function
Chronic Low Back Pain\textsuperscript{2,5}

- **Spinal manipulation**
  - Improved pain and function when used in combination with other active treatments
- **Ultrasound** - no effect on pain or function
- **TENS** - no effect on pain or function
- **LLLT** - improved pain and function

Chronic Low Back Pain\textsuperscript{2,5}

No effect on pain or function
- **Lumbar support**
- **Taping**
- **Other therapies** - electrical muscle stimulation, interferential therapy, short-wave diathermy, traction, or superficial heat or cold
Radicular Low Back Pain$^{2,5}$

- **Exercise** - Small improvement in pain
- **Traction** - No effect on pain or function
- **Other Therapies** - no effect on pain or function
  - Ultrasound, MCE, Pilates, Tai chi, yoga, psychological therapies, rehabilitation, acupuncture, massage, spinal manipulation, LLLT, electrical muscle stimulation, short-wave diathermy, TENS, interferential therapy, superficial

Harms of Non-pharmacologic Therapies$^2$

- **No serious adverse events**
- **Muscle soreness** - exercise, massage and spinal manipulation
- **Skin site reaction** - transcutaneous electrical nerve stimulation
- **Skin flushing** - superficial heat
Comparison of Guidelines

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<tr>
<td>Acetaminophen effective for acute low back pain</td>
<td>No difference in effectiveness in acetaminophen vs placebo</td>
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Recommendation 1 \(^2,5\)

**Acute or sub-acute low back pain**

- Non-pharmacologic treatment with superficial heat, massage, acupuncture, or spinal manipulation
- Pharmacologic treatment- anti-inflammatory or skeletal muscle relaxant medications
Recommendation 2

Chronic Low Back Pain - 1st line
• Non-pharmacologic therapy - exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction, tai chi, yoga, motor control exercise, progressive relaxation, EM biofeedback, low-level laser therapy, operant therapy, CBT, or spinal manipulation

Recommendation 3

Chronic Low Back Pain
• Inadequate response to no-pharmacologic therapy
• 1st line - NSAIDs
• 2nd line - Tramadol or Duloxetine
• Opioids only if failed above and if benefits outweigh risks
Protecting Your Own Back

Ways to Protect Your Back

• Maintain healthy diet and weight
• Wear comfortable shoes
• Adjust table height
• Maintain proper posture
• Lift with your knees
• Engage your core prior to moving the patient
What’s Wrong with this Picture?

What’s Wrong with this Picture?
What’s Wrong with this Picture?

Protect Your Back

• Use OMT when possible
• Think before you position yourself or move the patient
• Nice to have colleagues that do OMM!
5 Minute Osteopathic Treatment for Low Back Pain

Physiology of Low Back Pain

- Sympathetic Innervation - T10-L2
- Parasympathetic Innervation - Vagus Nerve, Pelvic splanchnic nerves - S2-S4
- Motor innervation - L1-4, S1-2
Etiology of Low Back Pain

• Musculoskeletal Causes
  – Somatic dysfunction
  – Muscular strain/sprain
  – Psoas syndrome
  – Spondylosis
  – Spondylolisthesis
  – Fracture
  – Arthritis

  Musculoskeletal Causes are MOST common

• Neuropathic Causes
  – Disc herniation
  – Nerve compression
  – Cauda Equina
  – Meningeal infections
  – Intradural tumors
  – Neurofibromas

• Systemic Causes
  – Pregnancy
  – Metastatic tumors
  – Vascular- AAA
  – Visceral reflex from GI tract

Assessment for Red Flags

• Traumatic history
• History of Progressive weakness
• H/o cancer with new onset LBP, weight loss, fever, lymphadenopathy
• Fever, recent infection, IVDA
• Bowel or bladder incontinence, motor deficit at multiple spinal levels, spinal anesthesia
Assessment for Red Flags

- H/o osteoporosis, corticosteroid use, advanced age
- Morning stiffness, alternating buttock pain, awakening due to back pain during the 2nd part of the night
- Back pain with leg pain in an L4, L5, S1 nerve distribution
- Radiating leg pain, older age, symptoms present >1 month

5 Minute OMM treatment

- Counterstrain for the Psoas muscle
- Myofascial release of the lumbar spine
- Muscle energy for sacral dysfunction
- Muscle energy for innominate dysfunction
- Muscle energy for piriformis muscle
Counterstrain for the Psoas Muscle

- Identify the tender point
- Adjust the hip into position of ease - flexion, abduction, external rotation
- Hold for 90 seconds
- Slowly return to neutral
- Re-assess

Myofascial Release for the Lumbar Spine

- Stand opposite the side of dysfunction
- Please hand over paravertebral musculature
- Apply lateral stretch for 3-5 seconds until a release is felt
- Repeat at all levels and on both sides
- Re-assess
Muscle Energy for Sacral Dysfunction

**Anterior Torsion**
- Patient lateral recumbent with chest up
- Axis up
- Monitor sacral base
- Doctor’s force up against the patient’s resistance
- Repeat 3-5 times
- Final stretch
- Re-assess

**Posterior Torsion**
- Patient lateral recumbent with chest up
- Axis down
- Monitor sacral base
- Doctor’s force down against the patient’s resistance
- Repeat 3-5 times
- Final stretch
- Re-assess
Muscle Energy for Innominate Dysfunction

**Anterior innominate**
- Patient supine
- Flex hip and knee to barrier
- Patient contracts hip against doctor’s resistance
- Repeat 3-5 times
- Final stretch
- Re-assess

**Posterior innominate**
- Patient supine
- Extend patient’s hip to barrier
- Patient flexes hip against doctor’s resistance
- Repeat 3-5 times
- Final stretch
- Re-assess
Muscle Energy for Piriformis Muscle

• Patient supine
• Flex the knee, flex and internally rotate the hip to the barrier
• Patient externally rotated the hip against the physician’s resistance
• Repeat 3-5 times
• Final Stretch
• Re-assess

Extended Treatment

• Gluteal muscle counterstrain
• Doming the diaphragm
• Thoracic- ME, myofascial release, and/or HVLA
• Myofascial release for ganglion restriction
• Chapman’s release of visceral dysfunction
Diagnoses that Affect Improvement

- Type II lumbar dysfunctions
- Short Leg syndrome
- Muscle imbalances
- Pubic Shears
- Sacral Shears
- Posterior Sacral Torsions

Conclusion

- Most acute back pain will resolve on its own
- Think non-pharmacologic therapies first
- Opioids should be “last option” for treatment
- Select therapies with the fewest harms and lowest cost
- Develop your own 5 minute approach
References

1 https://www.thegoodbody.com/back-pain-statistics/


Questions????