Welcome to UVM ECHO
Chronic Pain

Facilitators: Mark Pasanen MD, Liz Cote

Faculty: Carlos Pino MD, Rich Pinckney, MD, Patti Fisher MD, Charles MacLean MD, Sanchit Maruti MD, Michael Goedde, MD, Jill Warrington MD
Introduction to ZOOM

• Mute microphone when not speaking
  • If using phone for audio, please mute computer

• Position webcam effectively (and please enable video)

• Test both audio & video

• Use “chat” function for:
  • Attendance—type name and organization of each participant upon entry to each teleECHO session
  • Technical issues

• We need your input!
  • Use “raise hand” feature; the ECHO team will call on you
  • Please speak clearly
CME Disclosures

Northern Vermont Area Health Education Center (AHEC) is approved as a provider of Continuing Medical Education (CME) by the New Hampshire Medical Society, accredited by the ACCME. Northern Vermont AHEC designates this educational activity for a maximum of 1.5 Category 1 Credits toward the AMA Physician’s Recognition Award.

Interest Disclosures:

• As an organization accredited by the ACCME to sponsor continuing medical education activities, Northern VT AHEC is required to disclose any real or apparent conflicts of interest (COI) that any speakers may have related to the content of their presentations.
No Relevant Disclosures

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• Jill Warrington, MD
Non-opioid Management of Pain

Charles MacLean, MD
Mark Pasanen, MD
Outline/Objectives:

- Review primary and secondary literature
- Review current “best-practice” guidelines
- Discuss pragmatic considerations and solutions
Context
International Comparisons

- [https://ppsg.medicine.wisc.edu/chart](https://ppsg.medicine.wisc.edu/chart)
- ME without methadone by GDP (linear)
Primary and secondary literature
Cochrane

- [http://www.cochrane.org/](http://www.cochrane.org/)
  - Search “pain” and other filters
Yoga
- Any study=4521
  - Pain=651
    - RCT=133

Example:
A Randomized Trial Comparing Yoga, Stretching, and a Self-care Book for Chronic Low Back Pain

Karen J. Sherman, PhD, MPH; Daniel C. Cherkin, PhD; Robert D. Wellman, MS; Andrea J. Cook, PhD; Rene J. Hawkes, BS; Kristin Delaney, MPH; Richard A. Deyo, MD, MPH

Background: Chronic low back pain is a common problem lacking highly effective treatment options. Small trials suggest that yoga may have benefits for this condition. This trial was designed to determine whether yoga is more effective than conventional stretching exercises or a self-care book for primary care patients with chronic low back pain.

Methods: A total of 228 adults with chronic low back pain were randomized to 12 weekly classes of yoga (92 patients) or conventional stretching exercises (91 patients) or a self-care book (45 patients). Back-related functional status (modified Roland Disability Questionnaire, a 23-point scale) and bothersomeness of pain (an 11-point numerical scale) at 12 weeks were the primary outcomes. Outcomes were assessed at baseline, 6, 12, and 26 weeks by interviewers unaware of treatment group.

Results: After adjustment for baseline values, 12-week outcomes for the yoga group were superior to those for the self-care group (mean difference for function, −2.5 [95% CI, −3.7 to −1.3]; \( P < .001 \); mean difference for symptoms, −1.1 [95% CI, −1.7 to −0.4]; \( P < .001 \)). At 26 weeks, function for the yoga group remained superior (mean difference, −1.8 [95% CI, −3.1 to −0.5]; \( P < .001 \)). Yoga was not superior to conventional stretching exercises at any time point.

Conclusion: Yoga classes were more effective than a self-care book, but not more effective than stretching classes, in improving function and reducing symptoms due to chronic low back pain, with benefits lasting at least several months.

Trial Registration: clinicaltrials.gov Identifier: NCT00447668

Limitations of Published Research

- Narrow target populations
  - Almost always exclude complex patients
- Isolated interventions
- Short duration
- Outcomes measured
Guidelines and Evidence-based Summaries
Acknowledgements

- Vermont Academic Detailing Program
- Transforming the Treatment of Chronic Pain
  - US Dept of Veterans Affairs
    - https://www.va.gov/PAINMANAGEMENT/Opioid_Safety_Initiative_OSI.asp
Transforming the Treatment of Chronic Pain
Moving Beyond Opioids
Step 1: Self-management and optimized treatment of comorbidities

Step 2: Self-management and treating comorbidities + Non-pharmacologic therapy

Step 3: Self-management and treating comorbidities + Non-pharmacologic therapy + Non-opioid pharmacotherapy

Step 4: Self-management and treating comorbidities + Non-pharmacologic therapy + Non-opioid pharmacotherapy + Intensive Interdisciplinary Pain Rehabilitation +/- Intermittent use of opioids for limited conditions (see p. 15)
Figure 7. Non-pharmacologic Therapies

Psychosocial Interventions
- Cognitive-Behavioral Therapy (CBT)
- Acceptance and Commitment Therapy (ACT)
- Progressive relaxation therapy
- Mindfulness-based Therapies
- Pain School
- Behavior groups

Complementary and Integrative Health (CIH) Therapies
- Acupuncture
- Massage
- Chiropractic therapy
- Ice and heat therapy
- Meditation

Rehabilitation Therapies
- Physical therapy
- Occupational therapy

Exercise
- Stretching
- Tai chi
- Swimming
- Hiking
- Walking
- Yoga
- Chair exercises
Table 1. Evidence-Base for Managing Non-specific, Chronic Low Back Pain*

<table>
<thead>
<tr>
<th>Moderate</th>
<th>Small</th>
<th>No benefit</th>
<th>No data</th>
</tr>
</thead>
<tbody>
<tr>
<td>benefits for pain and/or functional outcomes</td>
<td>benefits for pain and/or functional outcomes*</td>
<td>for pain and/or functional outcomes</td>
<td>specific for <strong>chronic</strong> low back pain</td>
</tr>
<tr>
<td>- diflunisal$^{3,4}$</td>
<td>- duloxetine 60mg daily$^{24}$ (Dose used in trial)</td>
<td>- desipramine$^{26,27}$</td>
<td>- acetaminophen*</td>
</tr>
<tr>
<td>- naproxen sodium$^{3,4}$</td>
<td>- opiates$^{25}$</td>
<td>- imipramine$^{27,28}$</td>
<td>- skeletal muscle relaxants$^{1}$</td>
</tr>
<tr>
<td>- tramadol$^{5-9}$</td>
<td></td>
<td>- maprotiline$^{27,29}$</td>
<td>- systemic corticosteroids$^{1}$</td>
</tr>
<tr>
<td>- acupuncture$^{10,11}$</td>
<td></td>
<td>- fluoxetine$^{26,27}$</td>
<td>- local injections$^{35}$</td>
</tr>
<tr>
<td>- cognitive behavioral therapy$^{12-14}$</td>
<td></td>
<td>- paroxetine$^{27,29,30}$</td>
<td>- botulinum toxin injections$^{35}$</td>
</tr>
<tr>
<td>- exercise therapy$^{15,16}$</td>
<td></td>
<td>- trazodone$^{27,31}$</td>
<td>- transcutaneous electrical nerve stimulation (TENS)$^{1}$</td>
</tr>
<tr>
<td>- massage$^{17}$</td>
<td></td>
<td>- bupropion$^{27,32}$</td>
<td></td>
</tr>
<tr>
<td>- spinal manipulation$^{18}$</td>
<td></td>
<td>- glucosamine$^{33}$</td>
<td></td>
</tr>
<tr>
<td>- yoga$^{19,20}$</td>
<td></td>
<td>- pregabalin$^{34}$</td>
<td></td>
</tr>
</tbody>
</table>

*etoricoxib$^{21}$, rofecoxib$^{22}$, and valdecoxib$^{23}$ showed moderate benefits for pain but are not available in the US

<table>
<thead>
<tr>
<th>Harmful</th>
</tr>
</thead>
<tbody>
<tr>
<td>- firm mattress$^{1}$</td>
</tr>
</tbody>
</table>

*Data from Randomized, Placebo-controlled trials of nonspecific, chronic low back pain

*Chou et al. suggest small benefits of acetaminophen, however the data for this recommendation was generalized from data that did not include patients with non-specific, chronic back pain$^{1}$

**Definitions of Benefits**$^{36}$

**Large:** Mean >20-point improvement on a 100-point visual analog scale (VAS) or equivalent (pain outcomes), >5 points on the Roland–Morris Disability Questionnaire (RMDQ) or equivalent (function outcomes) or standardized mean difference (SMD) >0.8 (all outcomes)

**Moderate:** Mean 10- to 20-point improvement on a 100-point VAS, 2-5 points on the RMDQ, or SMD 0.5-0.8

**Small:** Mean 5- to 10-point improvement on a 100-point VAS, 1-2 points on the RMDQ, or SMD 0.2-0.5
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Description</th>
<th>Pain Benefits</th>
<th>Function Benefits</th>
<th>Cost per session</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acupuncture</td>
<td>One trial showed pain significantly different from a wait-list control but not significantly different from sham acupuncture\textsuperscript{11}</td>
<td>Moderate\textsuperscript{10,11}</td>
<td>Moderate\textsuperscript{10}</td>
<td>$65-$75</td>
</tr>
<tr>
<td>Cognitive behavioral therapy</td>
<td>Data support CBT is beneficial in helping patients return to work\textsuperscript{14}</td>
<td>Moderate\textsuperscript{12}</td>
<td>Moderate\textsuperscript{12,13}</td>
<td>$60-$100</td>
</tr>
<tr>
<td>Exercise therapy (physical therapy)</td>
<td>“a series of specific movements with the aim of training or developing the body by a routine practice or as physical training to promote good physical health”\textsuperscript{40}</td>
<td>Moderate\textsuperscript{15}</td>
<td>Small\textsuperscript{15}</td>
<td>$65-$75</td>
</tr>
<tr>
<td>Massage</td>
<td>Study permitted commonly used therapies such as Swedish, deep-tissue, neuromuscular, and trigger and pressure point techniques but excluded energy techniques (e.g. Reiki, therapeutic touch)\textsuperscript{17}</td>
<td>Moderate\textsuperscript{41}</td>
<td>Moderate\textsuperscript{17,42}</td>
<td>$65-$70</td>
</tr>
</tbody>
</table>
## Table 2. Non-Pharmacologic Therapies for Chronic Low Back Pain

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Description</th>
<th>Pain Benefits</th>
<th>Function Benefits</th>
<th>Cost per session</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinal Manipulation</td>
<td>Adjustment which may be performed by Chiropractors, Osteopathic physicians and others trained in this technique. Data refer to both manipulation or mobilization (manipulation differs from mobilization in that it focuses on a different range of motion of the involved joint)(^{18})</td>
<td>Moderate(^{18})</td>
<td>Moderate(^{18})</td>
<td>$75</td>
</tr>
<tr>
<td>Yoga</td>
<td>Iyengar Yoga(^{20}) and Viniyoga(^{43}) have benefits “emphasis on precise structural alignment, the use of props, and sequencing of poses, and by the incorporation of all aspects of Astanga Yoga into the practice of postures and breath control”(^{20}) “Each class included breathing exercises, 5 to 11 postures (lasting approximately 45-50 minutes), and guided deep relaxation”(^{43})</td>
<td>Moderate(^{20})</td>
<td>Moderate(^{19,43})</td>
<td>$10-$12</td>
</tr>
</tbody>
</table>

**Definitions of Benefits\(^{36}\): **

**Moderate:** Mean 10- to 20-point improvement on a 100-point VAS, 2-5 points on the RMDQ, or SMD 0.5-0.8,

**Small:** Mean 5- to 10-point improvement on a 100-point VAS, 1-2 points on the RMDQ, or SMD 0.2-0.5
Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians

Amir Qaseem, MD, PhD, MHA; Timothy J. Wilt, MD, MPH; Robert M. McLean, MD; and Mary Ann Forciea, MD; for the Clinical Guidelines Committee of the American College of Physicians*

Description: The American College of Physicians (ACP) developed this guideline to present the evidence and provide clinical recommendations on noninvasive treatment of low back pain.

Methods: Using the ACP grading system, the committee based these recommendations on a systematic review of randomized, controlled trials and systematic reviews published through April 2015 on noninvasive pharmacologic and nonpharmacologic treatments for low back pain. Updated searches were performed through November 2016. Clinical outcomes evaluated included reduction or elimination of low back pain, improvement in back-specific and overall function, improvement in health-related quality of life, reduction in work disability and return to work, global improvement, number of back pain episodes or time between episodes, patient satisfaction, and adverse effects.

Target Audience and Patient Population: The target audience for this guideline includes all clinicians, and the target patient population includes adults with acute, subacute, or chronic low back pain.

Recommendation 1: Given that most patients with acute or subacute low back pain improve over time regardless of treatment, clinicians and patients should select nonpharmacologic treatment with superficial heat (moderate-quality evidence), massage, acupuncture, or spinal manipulation (low-quality evidence). If pharmacologic treatment is desired, clinicians and patients should select nonsteroidal anti-inflammatory drugs or skeletal muscle relaxants (moderate-quality evidence). (Grade: strong recommendation)

Recommendation 2: For patients with chronic low back pain, clinicians and patients should initially select nonpharmacologic treatment with exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction (moderate-quality evidence), tai chi, yoga, motor control exercise, progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, cognitive behavioral therapy, or spinal manipulation (low-quality evidence). (Grade: strong recommendation)

Recommendation 3: In patients with chronic low back pain who have had an inadequate response to nonpharmacologic therapy, clinicians and patients should consider pharmacologic treatment with nonsteroidal anti-inflammatory drugs as first-line therapy, or tramadol or duloxetine as second-line therapy. Clinicians should only consider opioids as an option in patients who have failed the aforementioned treatments and only if the potential benefits outweigh the risks for individual patients and after a discussion of known risks and realistic benefits with patients. (Grade: weak recommendation, moderate-quality evidence)


For author affiliations, see end of text.
This article was published at Annals.org on 14 February 2017.
ACP Guideline Recommendations - 2017

1. Acute & subacute
   - Heat, massage, acupuncture, spinal manipulation

2. Chronic
   - Start with exercise, rehab, acupuncture, MBSR, Tai Chi, yoga, motor control exercise, progressive relaxation, EMG biofeedback, laser, operant therapy, CBT, or spinal manipulation

3. Non-responsive chronic
   - NSAIDS first-line
   - tramadol/duloxetine second line
   - Opioids only for failures and after weighing risks/benefits
Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review

Evidence Summary

Introduction
Chronic pain substantially impacts physical and mental functioning, productivity, quality of life, and family relationships; it is the leading cause of disability and is often refractory to treatment. Chronic pain is often defined as pain lasting 3 months or longer or persisting past the normal time for tissue healing, though definitions vary. Chronic pain affects millions of adults in the United States, with an annual cost in personal and health system expenditures conservatively estimated at $560 billion to $635 billion. Chronic pain is multifaceted and is influenced by multiple factors (e.g., genetic, central nervous system, psychological, and environmental factors) and complex interactions, making pain assessment and management a challenge.

Many pharmacological and nonpharmacological treatments are available for management of chronic pain and include a variety of noninvasive as well as surgical and interventional procedures. The National Pain Strategy (NPS) report and 2011 Institute of Medicine (IOM) report describe the need for evidence-based strategies for the management of chronic pain that address the biopsychosocial nature of this problem, including nonpharmacological treatment. Recently, guidelines on opioid use for chronic pain by the Centers for Disease Control and Prevention (CDC) included

Purpose of Review
To assess which noninvasive nonpharmacological treatments for common chronic pain conditions improve function and pain for at least 1 month after treatment.

Key Messages
- Interventions that improved function and/or pain for at least 1 month when used for:
  - Chronic low back pain: Exercise, psychological therapies (primarily cognitive behavioral therapy [CBT]), spinal manipulation, low-level laser therapy, massage, mindfulness-based stress reduction, yoga, acupuncture, multidisciplinary rehabilitation (MDR).
  - Chronic neck pain: Exercise, low-level laser, Alexander Technique, acupuncture.
  - Knee osteoarthritis: Exercise, ultrasound.
  - Hip osteoarthritis: Exercise, manual therapies.
  - Fibromyalgia: Exercise, CBT, myofascial release massage, tai chi, qigong, acupuncture, MDR.
  - Chronic tension headache: Spinal manipulation.
- Most effects were small. Long-term evidence was sparse.
- There was no evidence suggesting serious harms from any of the interventions studied; data on harms were limited.
Categorization of treatments

- Exercise
  - Including PT

- Mind-body
  - Yoga, tai chi, quigong

- Psychologic
  - CBT, biofeedback, relaxation, acceptance and commitment therapy

- Multi-disciplinary programs

- Mindfulness

- Musculoskeletal manipulation
  - Chiropractic or osteopathic

- Physical modalities
  - Traction, ultrasound TENS, laser, heat/cold, magnets, etc.

- Acupuncture
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Function Short-Term</th>
<th>Function Intermediate-Term</th>
<th>Function Long-Term</th>
<th>Pain Short-Term</th>
<th>Pain Intermediate-Term</th>
<th>Pain Long-Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td>slight +</td>
<td>none +</td>
<td>none +</td>
<td>slight ++</td>
<td>moderate +</td>
<td>moderate +</td>
</tr>
<tr>
<td>Psychological Therapies:</td>
<td>slight ++</td>
<td>slight ++</td>
<td>slight ++</td>
<td>slight ++</td>
<td>slight ++</td>
<td>slight ++</td>
</tr>
<tr>
<td>CBT primarily</td>
<td>insuffcient evidence</td>
<td>no evidence</td>
<td>no evidence</td>
<td>none +</td>
<td>no evidence</td>
<td>no evidence</td>
</tr>
<tr>
<td>Physical Modalities:</td>
<td>slight +</td>
<td>none +</td>
<td>none +</td>
<td>moderate +</td>
<td>none +</td>
<td>no evidence</td>
</tr>
<tr>
<td>Spinal Manipulation</td>
<td>slight +</td>
<td>slight +</td>
<td>none +</td>
<td>slight ++</td>
<td>slightly +</td>
<td>none +</td>
</tr>
<tr>
<td>Massage</td>
<td>slight ++</td>
<td>none +</td>
<td>no evidence</td>
<td>slight ++</td>
<td>none +</td>
<td>no evidence</td>
</tr>
<tr>
<td>Traction</td>
<td>none +</td>
<td>no evidence</td>
<td>no evidence</td>
<td>none +</td>
<td>no evidence</td>
<td>no evidence</td>
</tr>
<tr>
<td>Mindfulness Practices:</td>
<td>none +</td>
<td>none +</td>
<td>none +</td>
<td>slight ++</td>
<td>slight +</td>
<td>none +</td>
</tr>
<tr>
<td>MBSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mind-Body Practices:</td>
<td>slight ++</td>
<td>slight +</td>
<td>no evidence</td>
<td>moderate +</td>
<td>moderate +</td>
<td>no evidence</td>
</tr>
<tr>
<td>Yoga</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acupuncture</td>
<td>slight +</td>
<td>none +</td>
<td>none +</td>
<td>slight ++</td>
<td>none +</td>
<td>slight +</td>
</tr>
<tr>
<td>Multidisciplinary Rehabilitation</td>
<td>slight +</td>
<td>slight +</td>
<td>none +</td>
<td>slight ++</td>
<td>slight +</td>
<td>none +</td>
</tr>
</tbody>
</table>
AHRQ Key Messages-1

- **Chronic low back pain**: Exercise, psychological therapies (primarily CBT), spinal manipulation, low-level laser therapy, massage, MBSR, yoga, acupuncture, multidisciplinary rehabilitation

- **Chronic neck pain**: Exercise, low-level laser, Alexander Technique, acupuncture

- **Knee osteoarthritis**: Exercise, ultrasound

- **Hip osteoarthritis**: Exercise, manual therapies
AHRQ Key Messages-2

- **Fibromyalgia**: Exercise, CBT, myofascial release massage, tai chi, qigong, acupuncture, multidisciplinary rehab

- **Chronic tension headache**: Spinal manipulation
AHRQ Key Messages-3

- Most effects were small
- Long-term evidence was sparse
- There was no evidence suggesting serious harms from any of the interventions studied; data on harms were limited
Comprehensive Approaches

- UVMMC Pain Management
- DHMC Pain Management Center
- UVM Mind-Body program
  - CBT++

Comprehensive programs are relatively scarce
Extender Strategies

- 250 Veterans, 12 months

- Intervention:
  - Automated symptom monitoring
  - Medication advancement algorithm

- Outcome
  - Improved pain & “pain interference”
Pragmatic Considerations

- Benefit versus harm
  - Relatively ineffective treatments may be very reasonable as long as potential for harm is low

- Combined modalities are not studied
  - Steno study analogy

- Kitchen sink risk

- To what degree do complex psychosocial co-morbidities contribute to chronic pain?
Discussion

- What do you have available in your practice?
  - Integrated behavioral health
  - Integrated complementary therapies
  - Easy access to effective specialty care
  - Other

- What approaches have you found to be successful?

- What would an ideal system look like for you?
  - Specialty-centric versus integrated system for chronic pain
    - Hub and Spoke system for chronic pain