Evidence-based nonpharmacologic pain medicine as culture change in practice, education and policy: How do we get there from here?

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Overview

- Pain crisis in US
  - Burden of pain including economic impact
- Opioid epidemic
  - Adverse effects and addiction liability
  - Continued inadequate pain care
- Evidence-based nonpharmacologic options
  - Acute pain inpatient setting
  - Acute pain outpatient setting
  - Cancer pain
  - Chronic pain

Burden of pain including economic impact

- $560-635 billion annual cost of pain care
  - Exceeds annual expenditures for heart disease, cancer, diabetes combined
- 11-47% of US population have chronic pain
  - Low back, neck, OA, headache most common
  - Leading cause of disability globally
  - Expected to rise with increase in diabetes, obesity and surgeries
- 17.8% GDP spent on healthcare; significant portion on pain
- $78.5 billion annual opioid overdose, abuse, dependency
  - 2015 private insurers and employer self-funded plans pain $16,000 more per patient w/dx opioid abuse or dependence than for any other diagnosis
Pain Task Force White Paper
Accessed by 5000+ colleagues

- [www.nonpharmpaincare.org](http://www.nonpharmpaincare.org)
- Researchgate
- Including DoD, VA, CMS, NIH, multiple professional organizations and researchers around the world


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**ACUTE**

**CHRONIC**
ACUTE PAIN

- A DANGER alert system
- A signal of potential life-threatening injury
- A brain process (no brain no pain)
- A need for urgent action
- Subject to modification by the CNS

NON-LIFE THREATENING PAIN

- A brain process modifies our sense of urgency
- Inhibitory central and peripheral pathways
- No need for urgent action
WHAT IS CHRONIC PAIN?

• Possibly ongoing nociception
• A change in brain processes
• The failure of descending inhibitory pathways
• A chronic disease
• An urgent need for drugs?

WHAT FACILITATES CHRONIC PAIN?

• Peripheral and central sensitization (Mense) Ongoing nociception sensitizes (Mense)
• Descending inhibitory pathways augment pain-microglia
• Adaptive movement disorders-somatosensory cortex (Barbe)
• Chronic stress, PTSD, adrenal activation
• Adverse childhood events
• Opioids
• Chronic inflammation
WHAT IS PAIN

- A sensation
- A signal of injury
- A chronic disease
- A brain process
- A need for drugs

CHRONIC DISEASE

- Chronic diseases cause 7 in every 10 deaths each year in the United States.

- About 133 million Americans—nearly 1 in 2 adults—live with at least one chronic illness.

- More than 75% of health care costs are due to chronic conditions.

Medicine is like a game of connect the dots
Tree
Medicine is like a game of connect the dots

What about the connectors?
THE KEY TO HEALTH:

WOULD YOU TAKE A DRUG THAT PREVENTED THIS PERCENTAGE OF DISEASES?

- 93% DIABETES
- 81% HEART ATTACKS
- 50% STROKES
- 36% CANCERS

FASCIA

- Body-wide force signaling system
- More of a connector than a tissue demarcation
Connective tissue, stretching, inflammation & musculoskeletal pain

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MYOFASCIAL PAIN


MOVEMENT AS PAIN RELIEF

Movement Disorders in Chronic Pain


BIOCHEMICAL and HORMONAL DYSREGULATION: PAIN

• Low endorphins
• High inflammatory biomarkers
• Sleep disruption with low melatonin
• Cortisol high then low
• Cortical changes
• Cognitive changes
TREATMENT WITH OPIOIDS

- Master disruptor of all hormonal and inflammatory systems
- Endogenous opioid system dysregulation
  - Attachment
  - Reward
  - pain pathways
  - hormones


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The 6 Principles of Naturopathic Medicine:

- First, do no harm – utilize the most natural, least invasive and least toxic therapies
- The healing power of nature – trust in the body's inherent wisdom to heal itself
- Identify and treat the causes
- Doctor as teacher
- Treat the whole person
- Prevention

https://aanmc.org/naturopathic-medicine/
• Even with prescribed opioids, 70% patients still complain of moderate to severe post-op pain
• Lack of evidence for safety or effectiveness of opioids for chronic non-cancer (CNCP) pain.
• Unimodal pain care with opioids as the cornerstone can be considered disadvantaged care

Evidence confirms:

- Nonpharm Options
- Clinically effective
- Professions regulated by States
- Regulated scopes of practice
- Consistent standard that uses evidence-based benefits and harms for inclusion of medical/health practices
The Joint Commission (TJC)

- Revised 2000 pain mandate
- Clarified to include nonpharm Jan 1, 2015
- Effective January 1, 2018
- ‘Hospitals provide nonpharmacologic options for patients with pain’
- Scorable Element of Performance

[https://www.jointcommission.org/assets/1/18/Joint_Commission_Enhances_Pain_Assessment_and_Management_Requirements_for_Accredited_Hospitals1.PDF](https://www.jointcommission.org/assets/1/18/Joint_Commission_Enhances_Pain_Assessment_and_Management_Requirements_for_Accredited_Hospitals1.PDF)

Acute pain inpatient setting

- Post-operative pain
  - Acupuncture therapy
  - Massage therapy
  - Mind body directed therapies
    - Music therapy
    - Suggestive techniques and guided imagery
    - Virtual reality-assisted distraction (VR)
Acute pain inpatient setting
Post-operative pain

- **Acupuncture therapy**
  - 5 *systematic reviews meta-analyses*
    - Acupuncture reduces pain and opioid consumption 20-30%
    - Post-knee arthroplasty: reduced and delayed opioid need
    - Ear acupuncture: immediate pain relief sustained at 48 hrs. equivalent to analgesics
    - Reduces opioid-related side effects: nausea, dizziness, sedation, pruritus and urinary retention
    - Reviews support use of acupuncture as adjunct for surgical pain
    - Acupuncture therapy is *safe*, low AE and accepted in adult, pediatric and pregnant patients

Acute pain, trauma and ED

- Acupuncture therapy in ED
  - Systematic review with meta-analysis
    - Improved levels of pain and patient satisfaction in ED (2017)
    - Low cost and low AE
  - Retrospective trial acup decreased pain comparable to analgesics with additional benefit of reduced anxiety
  - RCT acupuncture superior to IV morphine (2016)
    - Pain relief
    - Onset of action
    - Fewer AE
Post-operative pain

- Massage therapy
  - 2 systematic reviews with meta-analyses
  - Massage reduces post-op pain and anxiety in surgical patients
  - RCTs massage for post-op pain and anxiety
    - Major surgeries military setting
    - Post-cesarean
    - Cardiac surgery
    - Thoracic surgery
  - Massage therapy is safe; rare serious AD and low rates of minor complaints such as muscle soreness

Mind body for acute inpatient

- Music therapy: 3 systematic reviews with meta-analysis
  - Peri-op music reduced pain in pediatric surgery (2015)
  - Reduces pain in burn patients during tx procedures (2017)
  - Music decreases pain, distress and analgesic use (2016)

- Suggestive techniques: one meta-analysis
  - Alleviate post-op pain especially in minor surgeries (2014)

- Virtual reality-assisted distraction (VR)
  - Reduces burn-induced and burn wound care pain in adults and children (2011-2017 trials)
Safety mind body

• Music therapy, suggestive techniques, guided imagery are safe options to improve post-operative recovery

• VR risk of nausea
  – Safety requires ‘safe areas’, ‘spotting’ and debriefing

Cancer pain: Acupuncture therapy

• SysRevMeta: effective for malignancy and surgery-related pain (2017)

• SysRevMeta: acup relieved joint pain in breast cancer tx induced menopause (2017)

• Effective in radiation sxs, pain of dysphagia, peripheral neuropathy
Cancer pain
Massage therapy

• SysRevMeta: massage for cancer patient pain, fatigue and anxiety compared to active comparators or usual care (2016)
• Meta: massage effective for relief of cancer pain especially surgery-related pain (2015)
• RCT massage effective for meta-static bone pain, mood status, relaxation and sleep (2011)
• Beneficial for children with cancer and blood diseases (2009, 2012)

Cancer pain
Mind body approaches

• SysRev: Web-based mindfulness (ehealth) supportive for cancer patients sx burden (2009)
• SysRevMeta: Music therapy improves cancer pain, emotional distress from pain w/small, significant reduction in opioid, nonopioid meds (2016)
American College Physicians Guidelines (ACP)

### Acute, subacute low back pain
- Superficial heat
- Massage therapy
- Acupuncture therapy
- Spinal manipulation
- If pharma desired (increase AE risk)
  - NSAIDs
  - Skeletal muscle relaxants (equivocal evidence)

### Chronic LBP
- Exercise, multidisciplinary rehab
- Acupuncture therapy
- MBSR
- Tai chi and Yoga
- Progressive relaxation, laser therapy, operant therapy
- CBT
- Spinal manipulation
Cancer pain
Acupuncture therapy

- American Society of Clinical Oncology Clinical Practice Guidelines found acupuncture was effective in improving pain (2016)

US Dept Health and Human Services
Agency for Healthcare Research and Quality
AHRQ

- Effective for cLBP (compared to placebo, sham, no tx, usual care, wait list)
  - Acupuncture therapy
  - Massage therapy
  - Tai chi
- As effective as active comparators
  - Spinal manipulation
NIH Recommends (2016)

- cLBP: Acupuncture and yoga (massage therapy, spinal manipulation, osteopathic manipulation)
- Knee OA: Acupuncture and Tai chi
- Neck pain: Massage
- Severe headaches and migraine: relaxation techniques
- Fibromyalgia: Relaxation approaches and Tai chi

Comprehensive Pain Care

- Multimodal approach to acute pain care
- Question opioids as cornerstone of acute pain care
- Frequency, dosage and timing of nonpharmacologic interventions for inpatient and acute pain care
- Need for ongoing research on comprehensive pain strategies
Effective nonpharm modalities per White Paper

- Acupuncture therapy
- Massage therapy
- Spinal manipulation
- Mind body approaches
  - MBSR, meditation, relaxation
  - (CBT) Biofeedback
  - Movement therapies, (PT) Tai chi and Yoga
    - Alexander Technique, Pilates, Feldenkrais
- Lifestyle and self-efficacy
  - Nutrition

Economics

Economic benefits of nonpharmacologic therapies in the tx of pain

- Course of treatment and cost for inpatient acute care
  - Options for daily tx while hospitalized
- Course of treatment and costs for outpatient chronic pain
  - SysRevMeta: benefit acup persisted at 12 months following a course of tx of 8-15 sessions over 12 weeks
    - Chronic pain of head, neck, shoulder, low back and knee
    - Most patients do not access full course of tx due to lack of insurance coverage