Doc, What Else Can I Do? Learning the Evidence Behind Complementary and Alternative Chronic Pain Management

for Chronic Nonspecific Low Back Pain
Part 1 of 2

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Karen Drexler, MD
APA PCSS-O; January 25, 2013

Conflicts of Interest

- No Financial Nor Academic Conflicts
- Biases, favorable toward:
  - Bio-psycho-social approach to health care
  - Self empowered Care / Self-Efficacy
  - Evidence Based Practice (EBP)
  - Systems of Care
    - Patient Centered Medical Home
  - Evidence is evolving, so learn for change

What is CAM?

- Complementary and Alternative Medicine
- All things "outside the box" of Bio-Medicine
- Complementary = "in addition to" Conventional "Scientific, Modern" Medicine
- Alternative = "in place of" Conventional
- Integrative = "combining the best of Conventional and CAM"

http://nccam.nih.gov/research/blog

NCCAM Summary

Scientific Evidence on CAM for Pain	Promising Evidence of Potential Benefit	Limited, Mixed, or No Evidence To Support Use
Low-Back Pain		
Acupuncture	✓	
Massage	✓	
Spinal Manipulation	✓	
Progressive Relaxation	✓	
Yoga	✓	
Prolotherapy		✓
Herbal Remedies		✓

http://nccam.nih.gov/sites/nccam.nih.gov/files/D456_05-14-2012.pdf

Sorry, we can't cover everything

- Goals: to Learn and Keep Learning
- Overview Part 1 (today):
  - CAM Popularity
  - How to Not be Fooled by the "Evidence"
  - Current CAM Evidence for:
    - Homeopathy
    - Mindfullness and Yoga
  - Now what?

Coming in Part 2

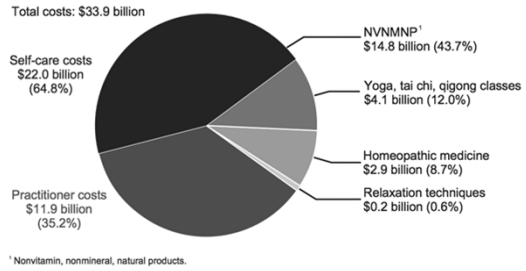
- Current CAM Evidence for:
  - Devil's Claw
  - Spinal Manipulation, Massage, Acupuncture and Alexander Technique
  - Reiki
- Now what?

Complementary and Alternative Medicine (CAM) is Popular

- Over 1/3rd of all adults used CAM in 2007
  - Your patients are using CAM
- Ask them what:
  - On
  - Tried
  - Wanting to try

2007 Data From **the National Health Interview Survey**. U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES. Centers for Disease Control and Prevention. National Center for Health Statistics

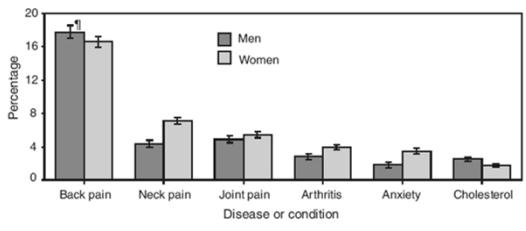
US Adult CAM Out-of-pocket Costs 2007



[1] Nonvitamin, nonmineral, natural products.

National Health Statistics Reports Number 18; July 30, 2009 Costs of Complementary and Alternative Medicine (CAM) and Frequency of Visits to CAM Practitioners: United States, 2007 by Richard L. Nahin, Ph.D., M.P.H., National Institutes of Health; Patricia M. Barnes, M.A.; Barbara J. Stussman, B.A.; and Barbara Bloom, M.P.A., Division of Health Interview Statistics

CAM is Popular for Women and Men



National Health Statistics Reports Number 12 - December 10, 2008 Complementary and Alternative Medicine Use Among Adults and Children: United States, 2007 by Patricia M. Barnes, et al

What we know about CAM

- Not much
- BUT, Chronic Opioid Therapy for CNCP is also based on Low Quality Evidence
  - "In the United States guideline, 21 of 25 recommendations were viewed as supported by only low-quality evidence.
  - In other words, the developers of the guidelines found that what we know about opioids is dwarfed by what we don't know."

Chou R CMAJ • JUNE 15, 2010 • 182(9) 881-2; Chou R, et al. Clinical Guidelines for the Use of Chronic Opioid Therapy in Chronic Noncancer Pain. Journal of Pain, Vol 10, No 2 (February), 2009: pp 113-130

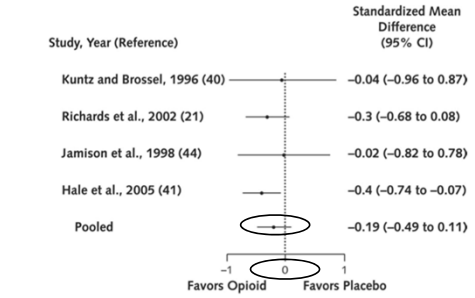
Cautionary Tale – Use of "Evidence"

- "Despite widespread use of narcotic drugs in hospitals, the development of addiction is rare in medical patients with no history of addiction."
- NEJM; Letter to the Editor
- Retrospective review
- Inpatients
- Porter J, Jick H. Addiction rare in patients treated with narcotics. N Engl J Med (1980) 302(2): 123

Cautionary Tale – Use of "Evidence"

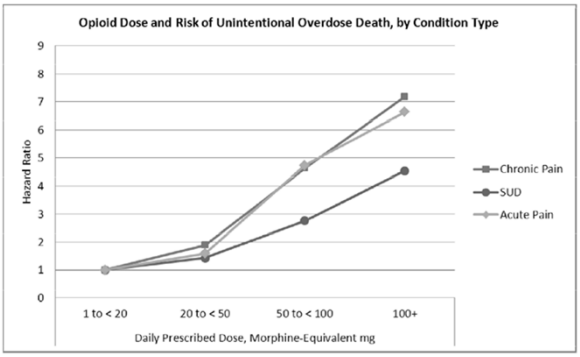
- "Opioid maintenance therapy can be a safe, salutary and more humane alternative…"
- Retrospective Case Series, Single Center
- 38 patients – 2/3 on < 20 mg morphine daily
- Portenoy, RK; Foley, KM. (1986). Chronic Use of Opioid Analgesics in Non-Malignant Pain: Report of 38 Cases. Pain, 25(2), 171-86.

Pain: 73mg [morphine] vs Placebo



Martell et al. **Systematic Review: Opioid Treatment for Chronic Back Pain: Prevalence, Efficacy, and Association with Addiction.** *Ann Intern Med.* 2007;146:116-127.

Risk of Opioid Overdose Among VA Patients, Prescribed Opioid Dose



From Bohnert, Valenstein, Bair et al., 2011 *JAMA*

Case Presentation
Karen Drexler, MD

- 28 year old Afghanistan veteran with TBI & PTSD
  - In rehabilitation for alcohol, "bath salt" and "spice" dependence
  - Seeks treatment for low back pain
- Aware that history of TBI & substance use disorder increases risk of addiction to opioids,
  - Asks about natural treatment (herbal, exercise)
  - Energy therapies, "Reiki" or "Healing Touch."

Assessing Clinical Effectiveness

Treatment	Outcomes	Costs
Conventional	Pain	Direct
CAM	Function	Indirect
Usual Care	Side-effects	

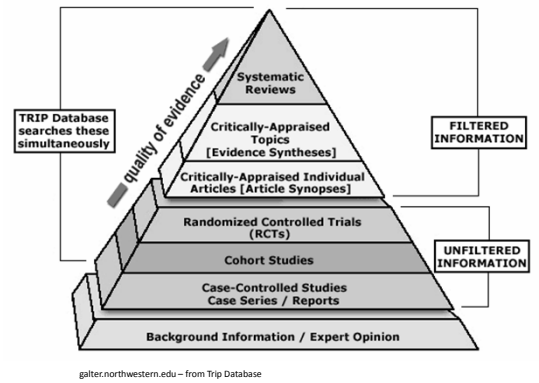
Furlan A et al. Complementary and Alternative Therapies for Back Pain II. Evidence Report/Technology Assessment No. 194. AHRQ Publication No. 10(11)E007. October 2010.

Evidence Based Practice

Sackett, D L (1999). Evidence-based medicine: How to practice and teach EBM (2nd ed.). Edinburgh: Churchill Livingstone.
http://www.library.auckland.ac.nz/subject-guides/edu/ebp/ebpsocialwork.htm (accessed Dec 3, 2012)

How Not to be Mis-led;
How to Appraise the Evidence:

- Validity of Methods
  - Jadad Score
  - GRADE Score
- Results - Treatment Effect based on Intention to Treat Analysis (ITT)
  - Minimally Clinically Important Difference (MCID)
  - Number Needed to Treat (NNT)
    - Confidence Intervals (CI; not Standard Error of the Mean [SEM])
  - Forest Plot
    - Standardized Mean Difference (SMD)
- Applicability
  - Patient Values
  - Safety
  - Costs



galter.northwestern.edu – from Trip Database

Jadad Score of Methodological Validity of RCT

- 0-5 points
- 3 points = "High Quality", "Low Risk of Bias"
  - Is the study randomised? If yes, + 1 point.
    - Is the randomization procedure reported and appropriate?
    - If yes, + 1 point.
    - If no, delete all points awarded for randomization.
  - Is the study double blind? If yes, + 1 point.
    - Is the double blinding method appropriate?
    - If yes, + 1 point.
    - If no, delete all points awarded for double blinding.
  - Are the reasons for patient withdrawals and dropouts described, for each treatment group?
    - If yes, + 1 point.

Jadad A. Assessing the quality of reports of randomized clinical trials: Is blinding necessary? Controlled Clinical Trials (1996) 17(1) 1-12

GRADE Working Group evidence grades – Systematic Review: How Confident?

- *High: Further research is very unlikely to change our confidence*
  - Several high-quality RCTs with consistent results
- *Moderate: Further research is likely to have an important impact*
  - One high-quality RCT
  - Several RCT with some limitations
- *Low: Further research is very likely to have an important impact*
  - One or more RCTs with severe limitations
- *Very low: Any estimate of effect is very uncertain.*
  - Expert opinion
  - One or more RCTs with very severe limitations

http://www.gradeworkinggroup.org/index.htm

How to Measure "PAIN" and Changes?

- MANY options:
  - Numeric Rating Score (NRS) 0-10
  - Visual Analog Scale (VAS) 0-100 …
- How to combine results with different Scales?
  - Standardized Mean Difference (SMD)

Cochrane Collaboration http://130.226.106.152/openlearning/HTML/modA1-4.htm

Is the effect size important?

- "A difference is a difference only if it makes a difference"

  Darrell Huff. How to Lie with Statistics. 1954
- Statistical Significance is necessary but not sufficient for Clinical Significance

Significant Improvements in Pain

- Patients' expectations: pain free
  - Impossible short of general anesthesia
- Minimum Clinically Important Difference
  - MCID = 30% reduction
    - > 2 points decrease on 0-10 scale
    - 0.5 change in SMD
    - < 0.7 or > 1.6 change in OR

Besides Pain
What Else Should Be Measured?

- Function
  - Meaningful
    - Patient-Centric
  - Measures:
    - Disease non-specific – SF 36
    - Disease specific – RDQ or ODI

Berzon R, Hays RD, Shumaker SA. International use, application, and performance of health-related quality of life instruments. Qual Life Res 1993;2:367–8.

Measures of Function

- Medical Outcomes Study Short Form 36: SF 36
  - 8 subscales; each scored 0-100
  - 20-30 point change is moderately significant
- Rowland [Morris] Disability Questionnaire: RDQ
  - 0-24 Scale
  - 2-3 point is Minimally Clinical Important Difference
  - 2-8 point change is needed for significant improvement
- Modified Oswestry Low Back Pain Disability Index: ODI
  - 10 questions scaled to 100 points
  - >10-20% change may be MCID

Crosby RD et al. Journal of Clinical Epidemiology 56 (2003) 395–407. Bombardier C et al. J Rheumatol 2001;28;431-438. Wyrwich K et al. Health Serv Res. 2005 April; 40(2): 577–592.

Lack of Safety & Side-effect Reporting

- Deficiency in:
  - CAM reporting
  - FDA oversight
- Remember additional risks, especially with:
  - Pregnancy
  - Drug – Drug Interactions
    - P450 concerns with many Botanical agents
      - E.g. St. John's Wort

CAM Categories:

- Whole Medical Systems
- Mind-Body Medicine
- Natural, Biologically Based Products
- Manipulation and Body Based Practices
- Energy Medicine

Whole Medical Systems

- Traditional Chinese Medicine
- Ayurvedic Medicine
- Traditional Healers
- Homeopathy
- Naturopathy

Homeopathy

- "Law of similarities" = "Like cures like"
- "Remedies"
  - Considered drugs
    - Food, Drug and Cosmetic Act of 1938
  - "High Potency" = extremely dilute

Homeopathic Treatment of Patients With Chronic Low Back Pain - A Prospective Observational Study With 2 Years' Follow-up
Claudia M. Witt et a lClin J Pain Volume 25, Number 4, May 2009

Homeopathy in LBP

- Prospective, multicenter, observational study
- 129 consecutive adults self entering treatment
- 144 Remedies used in 909 Prescriptions
  - Averaging 7 prescriptions per patient
- 34% remained in treatment through 2 years
  - Large numbers "Lost to Follow-up"

Homeopathic Treatment of Patients With Chronic Low Back Pain - A Prospective Observational Study With 2 Years' Follow-up Claudia M. Witt et al Clin J Pain Volume 25, Number 4, May 2009

Number Needed to Treat (NNT)

- Number of patients who must be treated to avoid an outcome in one patient
- Big number = many patients are exposed to side-effects and cost without improvement
- NNT = 1 / Absolute Risk Reduction
- ARR = difference in outcomes

? Infinitely Large NNT in Homeopathy

- NRS (Numeric Rating Score, i.e. 0-10)
  - Decreased by 1.5 points (<2) at 12 months
  - Not Minimally Clinically Important Difference
- Reportedly significant improvement in SF 36 QoL (Quality of Life) scores
  - Increase in 5 points on 0-100 scale at 12 months
  - Not Minimally Clinically Important Difference

Homeopathic Treatment of Patients With Chronic Low Back Pain - A Prospective Observational Study With 2 Years' Follow-up Claudia M. Witt et al Clin J Pain Volume 25, Number 4, May 2009

Safety in Homeopathy

- Dilutions of Remedies may not contain even one part of the substance

Cost of Homeopathy = ? $750

- Homeopath visit fees:
  - 1st visit for 60-90 minute interview
    - $100-300 MD
    - $50-250 non-MD
  - Following visits for 15-45 min; every 1-6 months
    - $50-100 MD
    - $30-80 non-MD
- Remedy
  - $4-10

http://www.homeopathic.com/Articles/Finding_care/How_Much_Does_Professional_Homeopathic_Care.html accesses Dec 2012

Mind-Body Medicine

- Progressive Relaxation
- Deep Breathing Exercises
- Meditation and Mindfullness
- Prayer
- Music Therapy
- Yoga

- Remember that these elements may be part of larger Whole System of Health

Mindfulness Therapy for cLBP

- "Derived from Buddhist spiritual tradition, mindfulness has been secularized and integrated into behavioral treatment"
  - Mindfulness-based stress reduction
  - Mindfulness-based cognitive therapy
- Goal is "to accept all varieties of experience"
  - "Present focused, nonjudgmental"

Cramer H et al. Mindfulness-based stress reduction for low back pain. A systematic review *BMC Complementary and Alternative Medicine 2012,* ***12:162***

Mindfulness-based stress reduction for low back pain. A systematic review

- 3 RCT; 117 patients
- Treatments: 8 weekly 1.5 hour sessions (½ teaching, ½ meditation) and meditation homework 45 minutes daily
- Control groups were "Waiting List" or *Health Ed

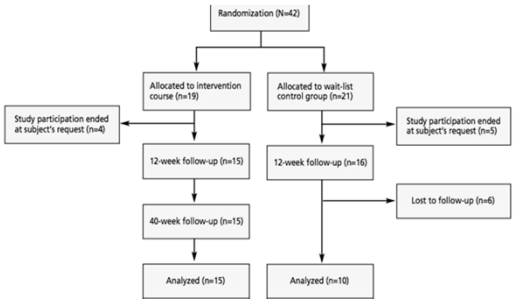
Author	Age	Inclusion	Follow-up
Esmer	55	failed surgery	40 weeks
Morone	74	moderate cLBP	3 months
*Morone	78	moderate cLBP	4 months

Cramer H et al. Mindfulness-based stress reduction for low back pain. A systematic review *BMC Complementary and Alternative Medicine 2012,* ***12:162***

Intention to Treat Analysis (ITT)

- Analyze outcomes based on
  - randomized assignment,
  - not based on the smaller group left after:
    - Cross-over
    - Lost to follow-up…
- ITT opposite of "Per Protocol Analysis"

Not Intention to Treat (ITT)



Esmer et al. J Am Osteopath Assoc. 2010;110(11):646-652

? Infinitely Large NNT Mindfulness Tx

- Esmer study after "failed" spinal surgery
  - Reportedly small improvements but not ITT
- Morone studies of older patients with cLBP:
  - No statistically significant change in pain
  - Trend, but no clinically significant change in disability
- Improvements noted in "acceptance" scores
- Prior studies in anxiety noted small, lasting decrease in symptoms

Cramer H et al. Mindfulness-based stress reduction for low back pain. A systematic review *BMC Complementary and Alternative Medicine 2012,* ***12:162***

Safety of Mindfulness Therapy

- No known adverse events

Cramer H et al. Mindfulness-based stress reduction for low back pain. A systematic review *BMC Complementary and Alternative Medicine 2012,* ***12:162***

Cost Mindfulness Therapy ? $400

- For 8 sessions
- Online programs available for anxiety…

https://www.tickets.umn.edu/CSH/Online/ accessed Jan 2013

Yoga in Chronic Low Back Pain Systematic Review

- Yoga started within Ayurveda
  - "Ancient knowledge that aims to discover the true sense of human life and to find remedies for diseases."
  - "[Yoga] creates inner, physical and emotional balance through the use of postures, called asanas, combined with breathing techniques or pranayama."
- To study "Yoga" we focus on isolated parts not necessarily the Whole System

Posadzki et al. (2011) Complementary Therapies in Medicine 19 (5) 281–287

Yoga in Chronic Low Back Pain Systematic Review

John (2007)	RCT with 2 parallel groups	72 patients with migraine headaches	12 weeks of integrated yoga approach, 5 days a week for 60 min	Self care	MPQ
Kuttner (2006)	RCT with 2 parallel groups	25 adolescents with irritable bowel syndrome	1 h instructional session of Hatha yoga and Iyengar yoga, followed by 4 weeks of daily home practice guided by a 10 min video	Wait list	(i) 10 points NRS
Saper (2009)	RCT with 2 parallel groups	30 patients with moderate-to-severe CLBP	12 weeks of Hatha yoga, once a week for 75 min	SC	11 points NRS
Sherman (2005)	RCT with 3 parallel groups	101 CLBP adults	12 weeks of Viniyoga for 75 min	Conventional therapeutic exercise classes or a self-care book	Pain bothersome on 11-point scale
Williams (2009)	Single blind RCT with 2 parallel groups	90 patients with CLBP	24 weeks of Iyengar yoga for 90 min	SC	VAS intensity
Yurtkuran (2007)	Single blind RCT with 2 parallel groups	37 patients with hemodialysis	30 min a day, twice a week of Hatha yoga for 3 months	No intervention	VAS intensity

Posadzki et al. (2011) Complementary Therapies in Medicine 19 (5) 281–287

Yoga in Chronic Low Back Pain Systematic Review

Table 2 Quality assessment of the included studies (Jadad score).

Study (year)	Domain					
	Random sequence generation	Appropriate randomization	Blinding of participants or personnel	Blinding of outcome assessors	Withdrawals and dropouts	Sum (Jadad score)
Attanayake (2010)	1	0	0	0	0	1
Chuntharapat (2008)	1	0	0	0	1	2
Garfinkel (1994)	1	0	0	0	1	2
Garfinkel (1998)	1	0	0	1	1	3
John (2007)	1	1	0	0	1	3
Kuttner (2006)	1	1	0	0	1	3
Saper (2009)	1	1	0	0	0	2
Sherman (2005)	1	1	0	0	1	3
Williams (2009)	1	1	1	0	1	4
Yurtkuran (2007)	1	1	1	0	1	4

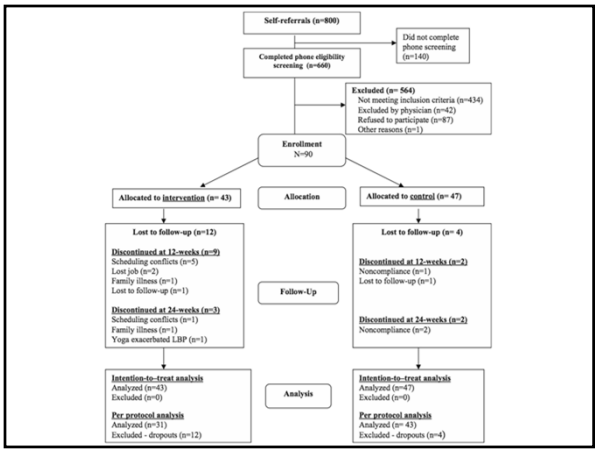
Points were awarded as follows: study described as randomized, 1 point; appropriate randomization, 1 point; subjects blinded to intervention, 1 point; evaluator blinded to intervention, 1 point; description of withdrawals and dropouts, 1 point.

Posadzki et al. (2011) Complementary Therapies in Medicine 19 (5) 281–287

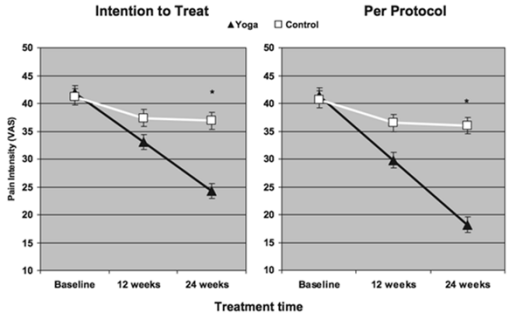
Yoga in Chronic Low Back Pain Single Blind RCT; Single Center

- Participants agreed to attend
  - at least 20 of 24 weeks and
  - at least 40 of 48 classes (90 min) and
  - to do 30 min sessions on non-class days
- Participants in the control group continued self-directed standard medical care
- Most were white, college graduated women
- Validity = 4 of 5 Jadad score

Williams K, Abildso C, Steinberg L, Doyle E, Epstein B, Smith D, et al. Evaluation of the effectiveness and efficacy of iyengar yoga therapy on chronic low back pain. *Spine* 2009;**34**:2066—76.

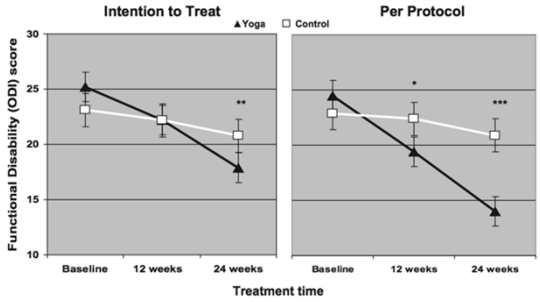


Pain - Yoga in Chronic Low Back Pain



Williams K, Abildso C, Steinberg L, Doyle E, Epstein B, Smith D, et al. Evaluation of the effectiveness and efficacy of iyengar yoga therapy on chronic low back pain. *Spine* 2009;**34**:2066—76.

Function - Yoga in Chronic Low Back Pain



Williams K, Abildso C, Steinberg L, Doyle E, Epstein B, Smith D, et al. Evaluation of the effectiveness and efficacy of iyengar yoga therapy on chronic low back pain. *Spine* 2009;**34**:2066—76.

? How Large a NNT for Yoga

- (slide 49) What do you see? What is implied?
  - See how the Per Protocol graph looks more impressive.
  - Look again at the VAS, in the ITT, Pain is statistically decreased but not quite to Minimally Clinically Improved Difference - Pain does not decrease by >2 points ie 20mm - ?could trend continue if study was extended??
- (slide 50) Also check out the whiskers depicting intervals for Function
  - these intervals are Standard Error of the Mean (SEM) and not Confidence Intervals (CI) - which would be approximately twice the width
  - Hence there is no statistical difference in the 24 week Functional assessment between experimental and control groups
- However, in selective, motivated patients, Yoga could be the start of a new approach to their complex pain with
  - Active, self empowered care
  - New thinking and behaving

Safety of Yoga

- Infrequent MSK injury
- Men may have greater risk:
  - 16% of Yoga practitioners are men,
  - but account for more injuries:
    - 30% fractures
    - 71% of nerve damage

http://www.nytimes.com/2012/12/23/sunday-review/the-perils-of-yoga-for-men.html?ref=health&_r=2& accessed Dec 2012

Cost of Yoga = ? $750

- 4 introductory classes $50-90
- $115 monthly fee, unlimited group classes
- MUCH more if you go in for all the trends…

http://www.bloomberg.com/consumer-spending/2011-10-19/the-real-cost-of-taking-up-yoga.html accessed Dec 2012

Summary of Part 1: State of EBP for CAM for cLBP

- Low quality of evidence
- Short term, small benefit possible for:
  - ? Mindfullness Therapies
  - Yoga
  - [and more evidence coming in Part 2]

Duration of Therapy?

- Yoga
  - Growing trend of effect
  - Should treatment continue beyond 8 weeks?
    - What would the cost be?
    - Would the small benefit grow?

So What Do We Do?

- Standardize best care within Medical Home
  - Then individualize care
    - Rather than just variation in care

So What Do We Do?

- Remember limitations and benefits of all our therapies: Conventional and CAM
  - If we applied the same rigorous criteria opioids would FAIL for chronic pain
- Perhaps Yoga and other therapies have some benefit [Wait for Part 2]
  - Consider applying them within a package of step-wise options

So What Do We Do?

- Seek:
  - Safety
  - Clinically Important Differences in effect
  - Resource stewardship

So What Do We Do?

- Bio-Psycho-Social Approach
  Screen for and address all:
  - Mental Health needs
    - Anxiety including PTSD
    - Depression including Bipolar
  - Substance Use Disorders
  - Relational, Vocational needs

So What Do We Do?

- Bio-Psycho-Social Approach
  - Empower Self-Care and Self-Efficacy
    - Learn:
      - Motivational Interviewing
      - Coaching
    - Encourage starting with one healthier behavior:
      - E.g. Progressive Relaxation, or Deep Breathing…
      - Could include Yoga …

Learn and Keep Learning

- Cochrane Collaboration
- PubMed Advanced Search
  - http://www.ncbi.nlm.nih.gov/pubmed/advanced
- Trip Database
  - http://library.medicine.yale.edu/guides/screencasts/finditfast/finditfast_9/PubMed Advanced

Questions?

NCCAM Summary

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Low-Back Pain		
Acupuncture	✓	
Massage	✓	
Spinal Manipulation	✓	
Progressive Relaxation	✓	
Yoga	✓	
Prolotherapy		✓
Herbal Remedies		✓

http://nccam.nih.gov/sites/nccam.nih.gov/files/D456_05-14-2012.pdf

NCCAM References/Resources

- Subscribing to CAM newsletter

https://nccam.nih.gov/tools/subscribe?digest=1

Summary Table

http://nccam.nih.gov/health/providers/digest/pain-science/chart

For Patient Reference

- 6 Tips for patients considering CAM

  http://nccam.nih.gov/health/tips/pain
- NCCAM Clinical Digest

http://nccam.nih.gov/health/providers/digest/chronicpain.htmMedlinePlus

http://www.nlm.nih.gov/medlineplus/medlineplus.html

CAM Therapies/Diagnostic Techniques Not Supported by NCCAM for LBP

- Glucosamine
- Prolotherapy
- Static Magnets
- Applied Kinesiology
- Iridology

http://nccam.nih.gov/sites/nccam.nih.gov/files/D456_05-14-2012.pdf Get the Facts updated Sept 2011, accessed Jan 2013

Coming in Part 2

- Current CAM Evidence for:
  - Devil's Claw
  - Spinal Manipulation, Massage, Acupuncture and Alexander Technique
  - Reiki
- Now what?