

# Mindfulness as a first line intervention in chronic pain management

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# Disclosure

- Advisory Board: Purdue Dec 2016, Paladin Dec 2016, Knight Therapeutic May 2017

# Objectives

- As a result of attending this session, participants will be able to:
  - ❑ **Be familiar with what mindfulness is (and what it isn't)**
  - ❑ **Discover how mindfulness can be a valuable tool in chronic pain management**
  - ❑ **Discuss some of the evidence for mindfulness and meditation in chronic pain management**

# Chronic Pain

## Pain

- An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage

*International Association for the Study of Pain (IASP), 1986*

## Chronic Pain

- Pain without apparent biological value that has persisted beyond normal tissue healing time (often noted as > 3 months)
- The persisting pain becomes its own pathology, independent of its initial cause

# Chronic Pain

- 20% of visits in primary care
- Chronic pain costs in Canada: more than cancer, heart disease and HIV combined (direct health care \$6 billion/year + productivity costs \$37 billion)\*
- The various approaches to chronic pain management offer only modest benefits for some
- Chronic pain: Orthopedic injury vs nervous-system related condition
- Paradigm shift in chronic pain management

# Chronic Pain

- Patients with chronic pain are often given the message that “you will have to live with this pain”
- Traditional approaches come up short on teaching patients **how** to live with the pain
- Pain is an experience – not just a sensation

# What is Mindfulness?

- Mindfulness is the awareness that arises through paying attention, on purpose, in the present moment, non-judgementally

Jon Kabat-Zinn

- Mindfulness is the ability to see what's happening in your head at any given moment, so you don't get carried away by it

Dan Harris

# Mindfulness-Based Stress Reduction

- Program created by Jon Kabat-Zinn 1979
- Brought **meditation** into mainstream medicine
- University of Massachusetts Medical Centre
- Variety of medical conditions
- 8 week program
- Centre for Mindfulness
  - <https://www.umassmed.edu/cfm/>
- Hundreds of programs worldwide
  
- MBCT (Mindfulness Based Cognitive Therapy) for depression relapse prevention
- MBCPM™ (Mindfulness Based Chronic Pain Management) for chronic pain



# What is Meditation?

- Setting aside a specific period of time in which we practice focused awareness of what we sense and experience in the present moment
- Practicing daily allows the mind to practice entering a state of lowered arousal and to practice being present without evaluating what is noticed
- Sympathetic activity may decrease and Parasympathetic activity increase

# What is Meditation?

- Meditation ≠ Relaxation
  - Mind focusing vs Mind wandering
- Not mind emptying, not thought suppression
- It is focused, non judgmental awareness in the present moment
- Repeatedly noticing “thinking” arising and returning non judgmentally, gently, to a bare, focused, awareness of the present
- Mind will wander – Bring it back
- Not Positive thinking

# Mindfulness and Meditation

- **Mindfulness:** Moment-to-moment non-judgmental awareness, being fully present with what is happening right now
- **Meditation** is the tool we use to cultivate mindfulness
- **Formal practice:** meditation
- **Informal practice:** mindfulness in everyday moments
  - Being more present, less reactive in daily life

# Mindful Showering



*courtesy of Dr. Bahram Jam*

# Unmindful Showering



# Why do some people develop chronic or persistent pain?

- 2 people with similar accidents or similar surgeries
- One person pain free after a few weeks
- The other develops chronic or persistent pain



MRI /CT scans analyzed by radiologists to predict pain:  
*there is no correlation*

# Why do some people develop chronic or persistent pain?

- Important to find a diagnosis that explains the pain
- Persistent nerve injury?
- In chronic pain, need to identify why it is persisting, reactivating and not healing
- Why is there still inflammation and nerve irritation months/years later?
  
- Transition from acute injury/illness to chronic pain via central sensitization: a "brain habit" is formed
- Nervous system stuck in state of heightened pain experience reactivity

# The Mind/Body Connection

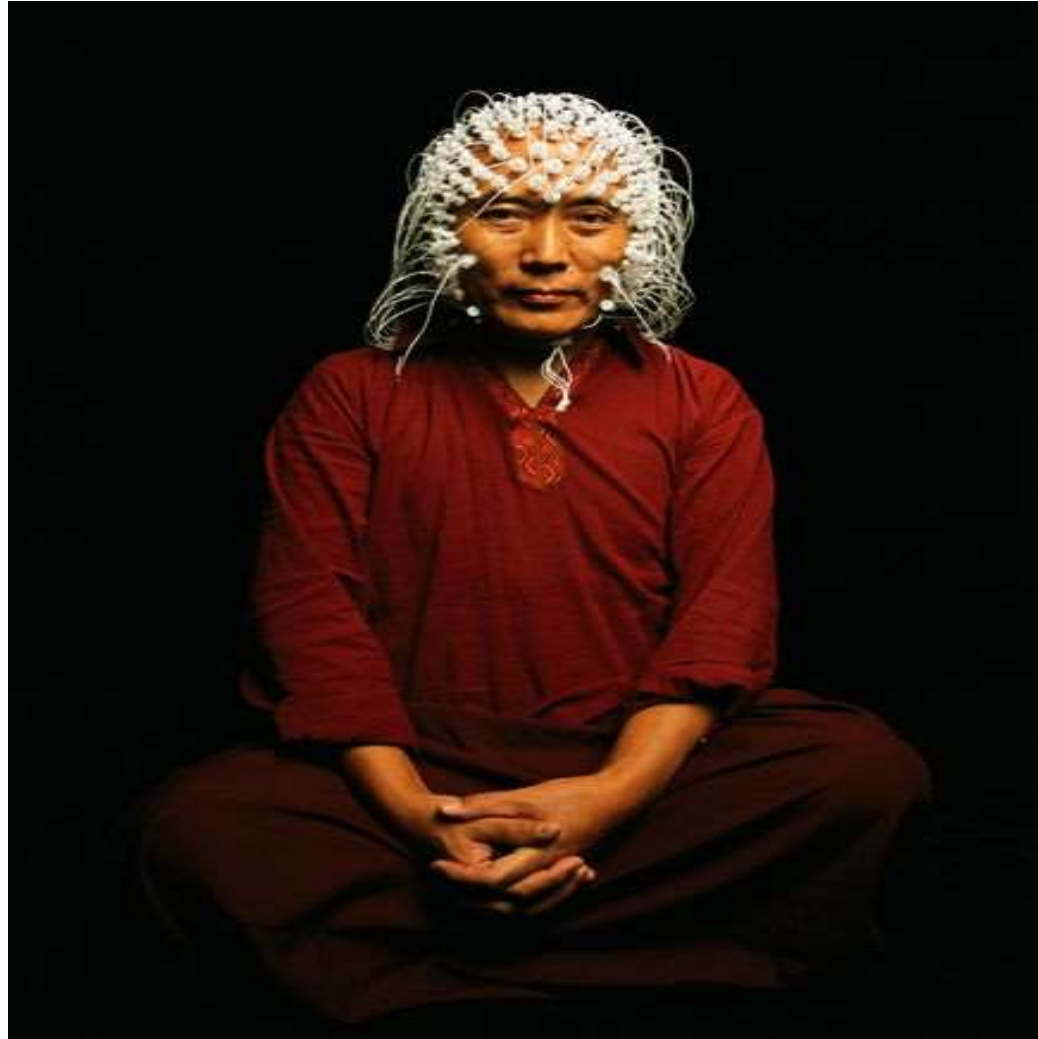
- **Suffering** caused by chronic pain comes from the combination of the pain sensation and what it means to the sufferer—how it is interpreted
- Physical pain and mental pain often inseparable
- Mind plays an important role in physical illness
- This is **certainly not** to say that pain is "all in their heads"
  
- Time of the ancient Greeks: mind affected illness
- René Descartes 17<sup>th</sup> century
  - Separation of mind and body



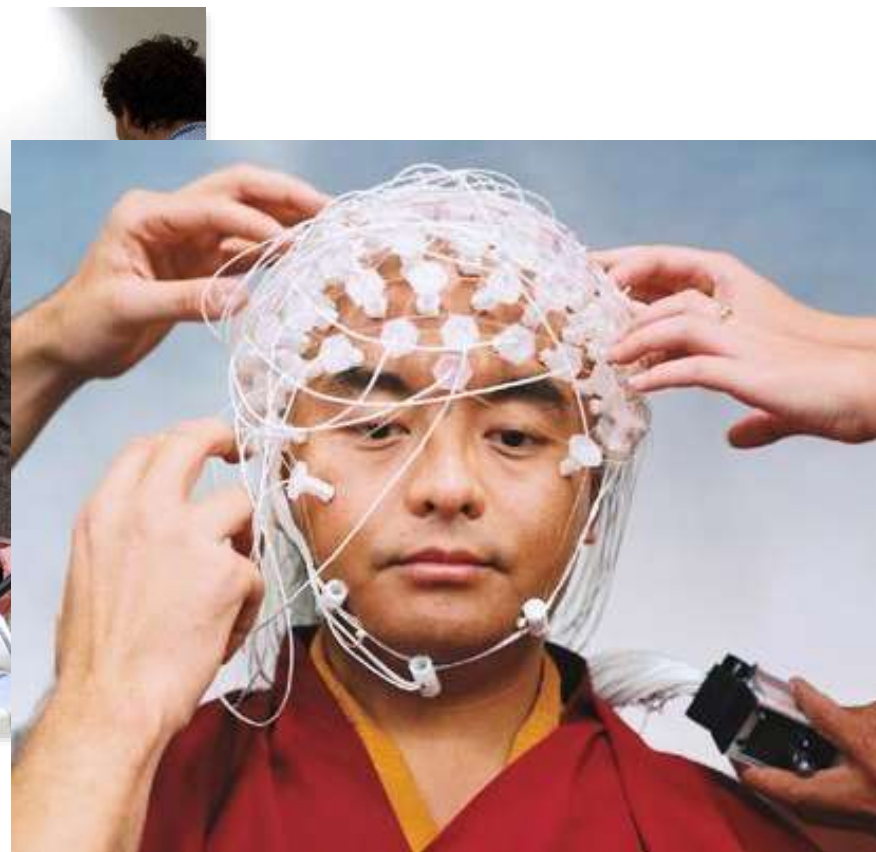
# Why Mindfulness for chronic pain?

- Chronic pain - Mind Body Connection "windup"
- With mindfulness:
  - learn to uncouple the somatic sensations from thoughts and emotions
  - learn to manage pain by better understanding the personal relationship to it: collaborating, rather than fighting it
- Goal is not to change the content of one's experience, but rather alter the way in which it is experienced
  - Example: pain in extreme sport may be tolerated better than as a result of a MVA

# What's the evidence?



# Contemplative Neuroscience



# Meditation and Brain Activation (Grant et al 2011)

- Meditators – increase activity in primary pain processing regions in the brain
  - Anterior cingulate cortex, thalamus, insula
  - Anterior cingulate cortex capable of modulating pain sensation
- Meditators – reduce activity in executive, evaluative emotional areas in the brain
  - PFC, amygdala, hippocampus, MCC
  - Reduced activity correlated with increased meditation experience
- Meditators have lower pain sensitivity
  - Correlated with decreased connectivity between executive & pain-related cortices

## In other words

- Meditators can feel the pain without thinking about, and dreading, the suffering which could be associated
- The brain's ability to dull the pain can get to work without interference from emotional wind-up—conscious or unconscious

# The clinical evidence

- *"Do Mindfulness-Based Interventions Reduce Pain Intensity? A Critical Review of the Literature"* – Pain Medicine February 2013
- Literature search from 1960 to 2010
- 16 studies included in the review
- 8 controlled – 8 not controlled
  
- Most studies (10 out of 16) showed significantly decreased pain intensity
- Controlled trials – 6 out of 8 showed higher reduction in pain intensity when compared with control groups
- Follow-up assessments → Reduction in pain intensity were generally well maintained

# The clinical evidence

- 2014 meta-analysis
  - Meditation Programs for Psychological Stress and Well-Being
  - 41 randomized controlled trials (2993 participants)
  - Moderate strength of evidence for improvement in anxiety, depression, and pain

# Mindfulness and Fibromyalgia

- Decrease in depressive symptoms

Sephton et al. 2007

- Decreased pain scores
- Better pain coping
- Improvement in anxiety, depression, and somatic complaints
- Improvement in quality of life
- Benefits sustained for 3 years

Grossman et al. 2007



# MBSR and Low back pain

- Randomized controlled trial of adults with chronic low back pain – JAMA 2016
- 342 participants – Randomly assigned to
  - 8-week MBSR course or CBT or usual care
- In MBSR group, 60.5% of participants showed clinically meaningful improvement in back pain–related functional limitation (vs 57.7% CBT and 44.1% usual care)
- In MBSR group, 43.6 % of participants showed clinically significant improvement in **pain bothersomeness** (vs 44.9% for CBT and 26.6% usual care)
- Improvements for participants were maintained after one year
  
- 2017 Clinical practice guideline American College of Physicians:
  - For Chronic low back pain – Non pharmacological treatments, including mindfulness-based stress reduction recommended

# Mindfulness for Chronic Pain

- Mindfulness-Based Chronic Pain Management (MBCPM™)
  - Program developed by Dr. Jackie Gardner-Nix, a physician and chronic pain consultant at St Michael's Hospital, Toronto, Canada
  - The Mindfulness Solution to Pain (2009)
  - Based on the Mindfulness-Based Stress Reduction Program (MBSR) originated by Jon Kabat-Zinn
  - Developed into a program more customized to the needs of those dealing with chronic pain with a particular attention to being **trauma-informed and trauma-sensitive**
  - Patient courses (groups) are usually once a week for 12 to 13 weeks, for 2 and a half to 3 hours per session

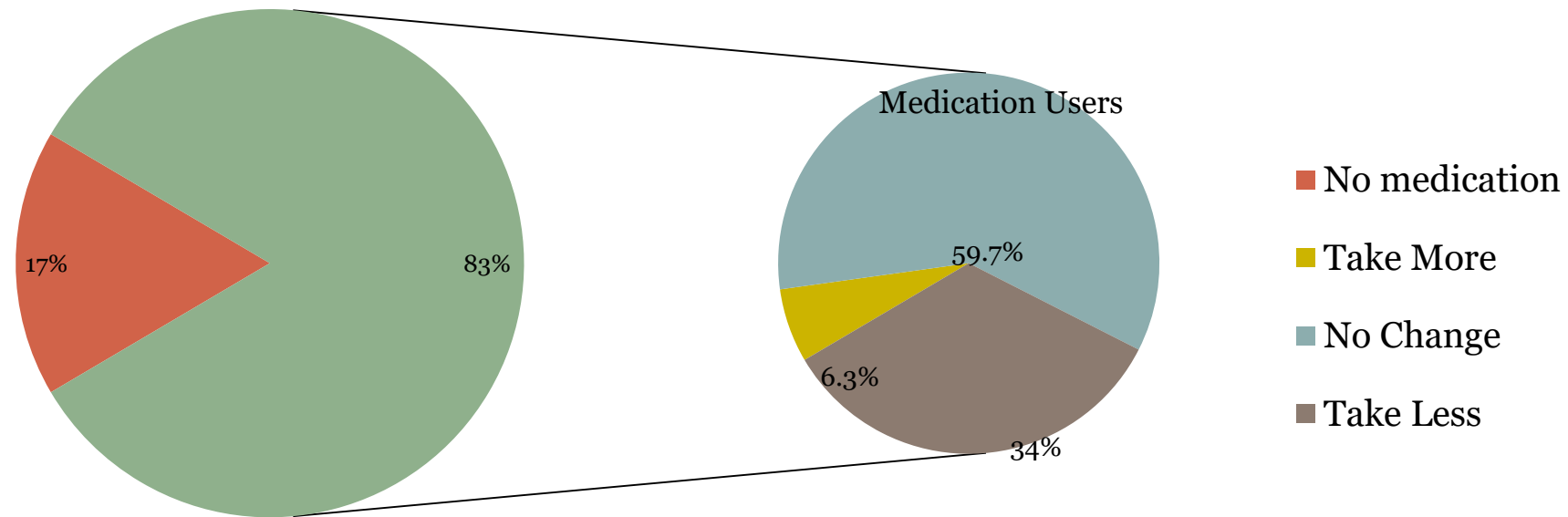
# MBCPM™ program

- Weekly education and discussion
- Factors that influence pain
- Through the lens of mindfulness
- Meditation practice
  
- Insights into why pain and suffering have become established
- Not a replacement for usual treatments
- Help understand how physical, psychological and emotional aspects of pain interact
- Improve overall health, improve function and decrease suffering

# Mindfulness for pain (MBCPM™) outcome

- Decreased perceived pain intensity
- Improved mental health
- Decreased Pain Catastrophizing
- Decreased measures of level of suffering
- Decreased medication use for some

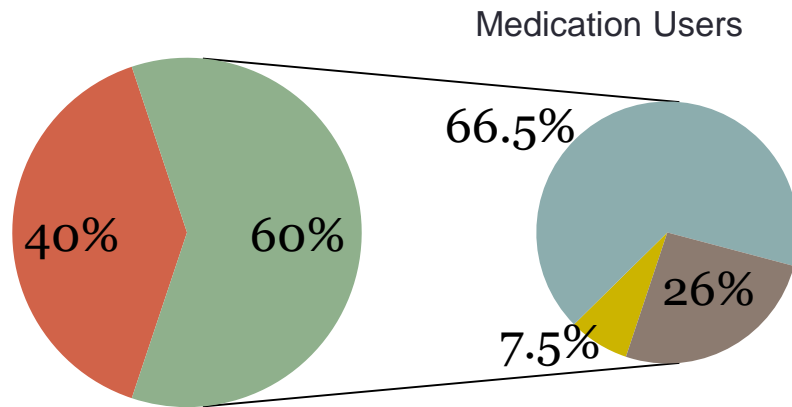
# MBCPM™ Chronic Pain Medication Changes:



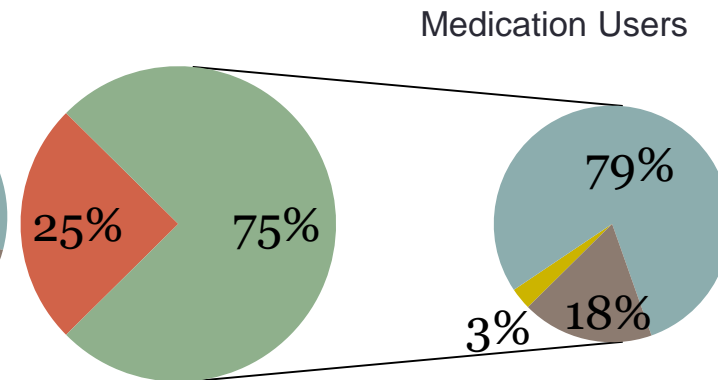
**Fig 24.** Medication Changes for Chronic Pain Sufferers Attending MPCPM courses in 2013/2014 (N=460 participants suffer from chronic pain, N=382 take medication)

# MBCPM™ Medication Changes for Other Conditions

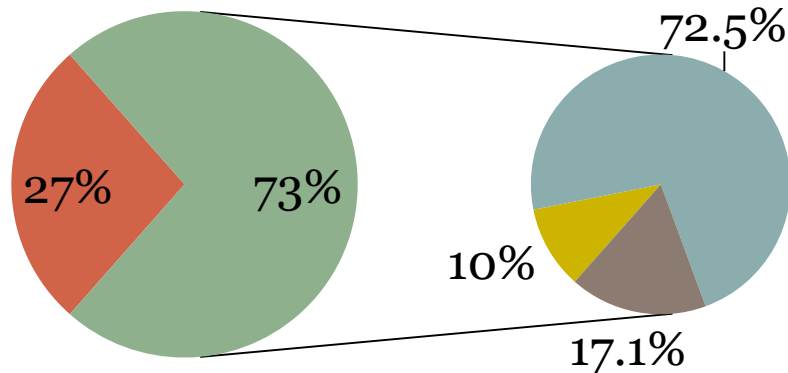
## Anxiety



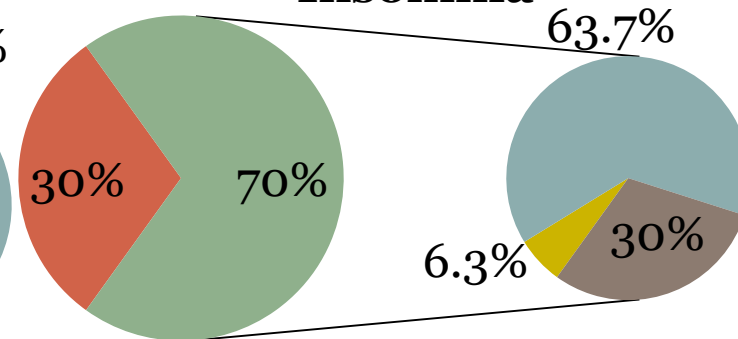
## Hypertension



## Depression



## Insomnia



- No Medication
- Take More
- No Change
- Take Less

**Anxiety:** N=332 suffer, N=200 take medication  
**Hypertension:** N=133 suffer, N=100 take medication  
**Depression:** N=304 suffer, N=222 take medication  
**Insomnia:** N=272 suffer, N=190 take medication

## Other Impacts of MPCPM™

- 72.8% more productive
- 60.5% see family & friends more
- Increased engagement in:
  - Favourite hobbies: 35%
  - Recreational activities: 33.3%
  - Physical activity: 42.3%
  - Volunteer activities: 15.0%

# Summary

- The various traditional approaches to chronic pain management offer only modest benefits for some
- A Mindfulness based management program can be a valuable addition to the treatment of chronic pain and complement usual approaches
- There is an increasing amount of evidence supporting the potential benefits of mindfulness in chronic pain sufferers with decreased pain intensity, improvement in function, and overall reduction in suffering



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