Research and Chronic Pain

Diana L Thompson, LMP
• Pain Statistics
• Definitions and Theories
• Massage and Movement Research
• Evidence Informs Treatment Exercise
• Hands-On Demo
• Awareness Self-care Exercise
Chronic Pain Statistics: Global

- Globally, 1 in 5 people suffer from moderate to severe pain (http://www.iasp-pain.org)

- 30% are unable or less able to maintain an independent lifestyle due to pain (IASP)

- Between ½ and 2/3 of people with chronic pain are less able or unable to exercise, enjoy normal sleep, perform household chores, attend social activities, drive a car, walk or have sexual relations. (http://www.who.int/mediacentre/news/releases/2004/pr70/en/index.html)
Chronic Pain Statistics: Global


- Global war on drugs leaving countries without access to pain medications – Uganda, India, Ukraine (http://www.internationalreporting.org/pain/)

- Death by painkillers epidemic: 15,000 deaths (http://www.cdc.gov/Features/VitalSigns/PainkillerOverdoses/)
• With millions taking NSAID pain medications every day, it is estimated that more than 100,000 Americans are hospitalized each year and between 15,000 and 20,000 Americans die each year from ulcers and gastrointestinal bleeding linked to NSAID use. (Adams, 2011, [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3166902/?tool=pmcentrez](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3166902/?tool=pmcentrez)) (Singh G. Recent considerations in nonsteroidal anti-inflammatory drug gastropathy. American Journal of Medicine. 1998;105(1B):31S–38S.) ([http://www.sciencedaily.com/releases/2007/10/071015081501.htm](http://www.sciencedaily.com/releases/2007/10/071015081501.htm))
Chronic Pain Statistics: U.S.

• 100 million people live with chronic pain in the U.S., up 40 million from 10 years ago
• 1 in 4 people over age 65 live with pain
• Cost of pain in America est. $560-635 billion

Chronic Pain Statistics: U.S.

- Chronic illness epidemic: 70% of deaths and 75% or $2 trillion of HC $$

- Overall healthcare spending is reaching $27 trillion per year—2-3 times more per capita than that of other developed countries

- Persons in the US have a lower life expectancy than those of many other developed countries
Chronic Pain Statistics: U.S.

- IOM enlisted to increase recognition of pain as a significant public health problem by Affordable Care Act
Underlying Principles of IOM Report

• Effective pain management is a moral imperative, professional responsibility, and the duty of people in the healing professions
• Need for interdisciplinary approaches, assessment and treatment
• Importance of prevention, early intervention
• Results depend on therapeutic relationship: clinician, patient and family working together
• Public health and community-based approach

Definitions: Acute Pain

- Acute pain occurs in response to tissue injury or infection
- A result of activation of peripheral pain receptors
- Serves a vital function as a warning sign
- Typically responsive to treatment
- Associated with hyperactivity of sympathetic nervous system: increased BP, pulse, respiratory rate, dilated pupils
- Local muscle contraction often present
Definitions: Chronic Pain

- Persistent pain for >3 months or one month past healing
- Is maladaptive – serves no purpose, unresponsive to typical treatments
- Chronic pain can sensitise and remodel the peripheral and central nervous system
- Appears out of proportion to unidentifiable problems
- Associated with vegetative signs: fatigue, loss of libido, loss of appetite, depressed mood
Definitions: Pain Pathology/Sensitization

• Hyperalgesia – lowered pain threshold: somewhat elevated pain response, possibly due to decreased production of serotonin, norepinephrine

• Allodynia – no pain threshold: pain due to a stimulus which does not normally provoke pain, and involves a change in the quality of a sensation, possibly due to opioid misuse, neuropathic conditions

• Hyperpathia – elevated pain threshold: learned pain suppression, elevated delayed response, often with mood instability
Definitions: Types of Pain

• Nociceptive – normal physiologic response to stimuli: mechanical, thermal, or chemical changes
  • Somatic pain: skin, muscles, bone. Well-localized.
  • Visceral pain: internal organs. Less well-localized.
  • dull, achy, pressure-like pain

• Neuropathic – induced by damage to nerves
  • Peripheral nerves
  • Central nervous pathways
  • May be constant or intermittent; burning, tingling, stabbing or electric, numbness, pins and needles
## Conditions Associated with Chronic Pain

- AIDS, Cancer
- Arthritis, back pain (#1 in US), neck pain, headache
- Diabetes, herpes, Lyme
- Fibromyalgia, syndromes (chronic fatigue, irritable bowel, myofascial pain, phantom leg)
- DJD, spinal stenosis, sciatica, restless leg syndrome
- Inflammatory nerve conditions, neuralgia/neuritis (brachial plexus, thoracic outlet, carpel tunnel)
Conditions Associated with Chronic Pain

• Chronic Nociceptive Pain
  • Fibromyalgia, chronic fatigue, myofascial pain
  • Osteoarthritis
  • Rheumatoid arthritis

• Chronic Visceral Nociceptive Pain
  • IBS
  • Non-cardiac chest pain
  • Abdominal pain syndromes
Conditions Associated with Chronic Pain

- Chronic Neuropathic
  - Diabetic neuropathy
  - Post-herpetic
  - Central pain syndromes: MS, stroke

- Chronic Mixed Nc & Np
  - Cancer
  - Low back pain
Theories: Chronic Pain

- Often a disease in and of itself
- A complex pathology
  - Cognitive, behavioral impairment: fear dictates
  - Anxiety, depression, sleep disturbances, function
- A dysfunction of the nervous system
  - Neuroplastic changes
  - Pain signals active even when resting
- The original injury is no longer the source of pain
Complications of Chronic Pain

- Psychological factors
  - Pain and fear of pain affects how people move
  - Limited activity = deconditioning = ▼ well-being

- Neuroplastic changes
  - Toxic effect of prolonged excitation
  - Cortical damage – sensory and motor changes

- Fibrotic connective tissue
  - compromised muscle function = ▲ fibrosis
  - ▼ lymph and nerve flow
Complications of Chronic Pain

- Predisposed to future exacerbations
- Vulnerable to unusual activity, from new sports to prolonged sitting
- If nerve inflammation is present, cannot tolerate normal activity or full range of motion
Neural Inflammation

- Neurogenic inflammation changes axons, making them sensitive to mechanical stimuli
  - Local pain
  - Peripheral pain (Bove)

- Local nerve inflammation does not spread to dermis or deep muscles (Corey)

- Local nerve inflammation causes nerves to be sensitive to strain, not tolerate normal ROM (Hodges)

- Peripheral pathology can cause major changes in spinal mechanisms of nociception (Henry)
Summary of Complications

- Damage to nervous system
- Damage to circulatory system
- Damage to soft tissues and organs
- Suppresses immune function
- Causes excessive inflammation
- Delays healing

(Pain Research & Practice, 2010, American Pain Foundation)
Definitions: Neuroplasticity

• The ability of the nervous system to respond to intrinsic and extrinsic stimuli by reorganizing its structure, function, and connections

• Can be adaptive in relation to therapy, e.g., functional improvements due to constraint-induced movement therapy

• Can be maladaptive, in response to disease or injury, e.g., progressive changes in the brain such as with chronic pain

• Workshop sponsored by NIH Blueprint for Neuroscience Research to promote translation of neuroplasticity research into clinical practice

Neuroplasticity

• 1990’s “Decade of the Brain”
  The brain produces as many as 10,000 new neurons every day until the day we die.

• 90 percent of the brain is made up of fascia (Koob 2009)

• Focused attention shapes the brain’s firing patterns & changes the physical structure

• Functional and cognitive (fear) changes are possible through neuroplastic repatterning
Neuroplasticity, Langevin, 2006

- Acute pain
- Chronic pain
- Fear of movement
- Fascial fibrosis
Neuroplasticity

Training attention

Less pain

Less fear

Changes shape & size

on one thing on one thing on one thing on one thing on one thing on one thing
Treatment Theories: Neuroplasticity

- Neuroplasticity is often:
  - Experience-dependent
  - Time-sensitive
  - Influenced by environment

- Critical modulators of plasticity
  - Salience
  - Motivation
  - Attention

- Behavior/function/cognition gains depend on continued therapeutic exposure (repetition)

- Visualization, cross-education also shown effective

Plasticity = Reversibility
TREAT THE NERVES

Nerves possess 3-layer fascial structure (Bove)

Fascia innervation is nociceptive and likely responsible for nerve trunk pain (Bove)

Movement at ankle or hip results in nerve motion at distant joints (Hodges)

Nerve endings are concentrated where stresses are the highest (Solomonow)
Treatment Guidelines

• Do not cause pain
• Address the entire body
• Focus on nervous system, lymph system
• Give the body time to rest during session
• Use awareness as a tool for learning/affecting neuroplasticity
• Teach self-care for in between sessions (neuroplastic repetition)
Evidence-Informed Practice

- Medical Evidence
- Clinician Expertise
- Patient Goals & Concerns

Medical Decision

Informed
Clinical Outcomes vs Research Outcomes

- Assess effectiveness of intervention
- Population vs individual
- Research protocol
  - Set intervention
  - No modification based on results
- Clinical situation
  - Assess throughout treatment
  - Modify based on ongoing results

- You are always doing research!
“Questions are the Answers” campaign encourages the use of evidence in clinical decision-making (Agency for Healthcare Research and Quality)

“Collaborative Care” model encourages patient-practitioner shared decision-making (IOM Roundtable on Value and Science-Driven Health Care)

Framing the Message

• “Making sure you get the best possible care starts with you and your HCP making the best decision for you”
• “Understand the best types of care based on the most recent medical evidence”
• Your HCP needs to listen to you, understand your needs and concerns, and answer your questions”
• “Every patient is different”
• Respectful communication acknowledges the patient’s goals and concerns and considers the best available evidence
Research on Massage

- To much force may worsen chronic pain therefore, understanding how much force to use is crucial in treating chronic pain (Langevin et al. 2006)
• Maintaining mobility is an important component in decreasing pain in older adults; stretching, strengthening, balancing, and self-massage can help. 

Research on Massage

- 6 Alexander lessons nearly as effective as 24 when combined with exercise homework one year post treatment

(Randomized control trial of Alexander technique lessons, exercise, and massage for chronic and recurrent back pain. Little, et al, British Journal of Sports Medicine, 12/08)
Research on Massage

• Long-term benefits of myofascial release/massage on sleep, short-term improvements in pain, anxiety, and quality of life in patients with fibromyalgia

Research on Massage

- Long-term massage most used and one of most effective for spinal cord injury pain (Chronic spinal cord injury pain: pharmacological and non-pharmacological treatments and treatment effectiveness. Heutink, et al, Disability and Rehabilitation, August 2011)
Research on Massage

- Multiple-disciplinary treatment more effective than single-treatment approach: exercise, massage, lumbar supports, education, hot/cold packs, traction, low-level light therapy, etc. (A systematic review on the effectiveness of physical and rehabilitation interventions for chronic non-specific low back pain. van Middelkoop, et al, European Spine Journal, 1/11)
• Topical (creme, gel, patch, solution) anti-inflammatory analgesics (NSAIDs) can provide good levels of pain relief for chronic musculoskeletal pain in adults.  
  
(Topical NSAIDs for chronic musculoskeletal pain in adults. Derry et al, Cochrane Database of Systematic Reviews 2012, Issue 9.)
Research on Massage

- Focused structural massage and relaxation massage for chronic back pain equally effective
- Massage is safe and effective for chronic neck pain
- Massage is more effective short term and long term than acupuncture and usual care for chronic back pain

(Cherkin, Sherman, Deyo, Institute of Research, Group Health Cooperative, research spanning 1997-2011)
Treatment Planning: Putting Research into Action

• What influences our sessions?
  – Intake information
    • Health history
    • Measurement tools
  – Interview questions
    • Function
    • Goals

• Which components of Evidence-Informed decision-making are addressed here?
Treatment Planning: Putting Research into Action

- What influences our sessions?
  - Assessments
    - ROM, movement
    - Visual, Posture
    - Palpation
  - Experience, training, intuition
  - Patient experience, personality, beliefs, preferences
  - Referral/prescription information

- Which components of evidence-informed decision-making addressed?
Treatment Planning: 4-Step Approach

• Gather information
• Identify patient’s/client’s desired outcomes
• Identify your goals for the session(s)
• Select techniques to best accomplish both your goals and the patient’s/client’s desired outcomes

² = Repeat: continue to gather information, assess progress, and modify treatment plan

• Ideally, this is an ongoing conversation with your patient/client
Treatment Plan

• Identify Symptoms
  – Sharp, shooting pain
  – Trigger point pain
  – Inflammation
  – Muscle guarding
  – Loss of function

• Identify Techniques/Goals
  – FB Swedish massage
  – Point pressure - gentle
  – Lymph drainage
  – Passive positional release, MET, SCS
  – Repetitive movement, resistive ROM, compression/traction
Treatment Plan

- **Frequency/Duration**
  - One time per week
  - 60 minute sessions
  - Prescription length = 8 sessions
  - Re-evaluation at 8/8

- **Self-Care Education**
  - Awareness: when you feel better/worse, notice what you are doing, thinking, feeling
  - Topical anti-inflammatories, pain crème (Biofreeze, Topricin, prescriptions)
  - Pillows (craniocradle, cervical support memory foam, knee support)
Exercise: Treatment Planning

• Pair up/small groups
• Bring a patient/client to mind
• Create a treatment plan
  – Symptoms
  – Treatment techniques
  – Frequency and duration of sessions
  – Self-care education
• Identify goals/outcomes
  – What will you have accomplished by the end of the series of massage sessions?
Why Incorporate Research?

• Confidence that massage is safe for client on the table
• Develop treatment plan that is effective and efficient
• Know how we fit into CAM and when to refer
• Data to use for marketing to allied health practitioners
• Data to increase job opportunities
Why Incorporate Research?

• Research also give us details:
  – Why, what, when, how often and for how long:
    • mechanisms
    • protocols
    • populations
    • dosing
    • measurement tools
Incorporating Research

• Stay current with email alerts
  – Medscape
  – ScienceDaily
  – BioMed Central

• Read summaries/original research
  – Magazine articles (MTJ)
  – Journal articles (ijtmb.org)
  – Case reports

• Create your own data: case reports

• Massage Therapy Foundation
“It is vital to remember that information—in the sense of raw data—is not knowledge, that knowledge is not wisdom, and that wisdom is not foresight. But information is the first essential step to all of these.”

- Arthur C. Clarke
If we have time…

Demo: Foot board treatment for nerves to increase new neuroplastic pathways

Self-care: Awareness exercise – pelvic clock
Thank You!

Diana L. Thompson, LMP

soapsage@comcast.net
www.HandsHeal.com

www.massagetherapyfoundation.org
www.ijtmb.org
Presenter Name:

Diana L Thompson, LMP