changing pain handout

This handout contains all slides in a pdf format with a few additional notes on some slides

Jan Brown PT, DPT
The Marian Center for Chronic Pain
janis.brown@bswhealth.org
817 922-2057

Costs of Pain

- 100 million people affected by chronic pain
- Total cost of $560-635 billion dollars in 2010 dollars
- Lost productivity $299-335 billion dollars


CDC Opioid Prescription Guidelines: Physical Therapy, Other Non-Drug, Non-Opioid Approaches Should be First-Line Treatment for Chronic Pain

Friday, January 15, 2016
CDC Says Nondrug Approaches Preferred to Treat Chronic Pain; APTA Adds Its Support

The US Centers for Disease Control and Prevention’s (CDC’s) draft clinical guidelines on the use of opioids for chronic pain make it clear: nondrug approaches such as physical therapy are the “preferred” treatment path for chronic pain.

Objectives

Attendees will be able to:

- Follow the introduction and progress of three crucial pain theories: Specificity, Gate Control and the Neuromatrix
- Discuss work by Melzack and Butler’s Explain Pain/Graded Motor Imaging as interventions appropriate for treating pain
- Identify sources of pain, particularly referred pain as it relates to our profession’s path toward Direct Access.
- Identify the relevance of prolonged sitting, repetitive movements and a sedentary lifestyle on painful conditions
- Implement effective documentation, billing and outcome tools for treating pain.

Theories

- Specificity
- Gait Control
- Neuromatrix

Moayedi M, Davis K. Theories of pain: from specificity to gate control. J Neurophysiology 109: 5-12, 2013
Specificity
Mathematician Rene Descartes, 16th Century

- Intensity of pain is directly related to the amount of associated tissue injury. For instance, pricking one’s finger with a needle would produce minimal pain, whereas cutting one’s hand with a knife would cause more tissue injury and be more painful.
- Dedicated pain pathways/fibers connecting to a specific sensory region in the brain: homunculus
- Hardwire concept, does not account for variability

Gait Control

- Ronald Melzack and Patrick Wall 1965

However.....

How can pain be the result of input from the peripheral tissue.....if there is no tissue.

The Neuromatrix Theory

Pain is a multidimensional experience produced by characteristic "neurosingature" patterns of nerve impulses generated by a widely distributed neural network—the "body-self neuromatrix"—in the brain.

These neurosignature patterns may be triggered by sensory inputs, but they may also be generated independently of them.

There are neurons that respond to all manner of stimuli. When activated these neurons send a prioritized alarm signal to the spinal cord which may send it to the brain. The brain will evaluate the peripheral data along with input from areas of the brain to assess the need, type, intensity and duration of the alarm to be sent.

**Sources of Pain**

Goodman and Snyder 2007

- **Cutaneous**: pain related to the skin
- **Somatic**: periosteum, bone, muscle/tendon/ligament and blood vessels, deep fascia, joint capsules
- **Neuropathic**: peripheral or central nervous system
- **Visceral**: internal organs and the heart muscle
- **Referred**: felt away from the site of the lesion
- **Brain**: rationale thought, memory, emotion, visual, auditory etc

**Sources**

**Cutaneous**

- Sharp, intense, point to it
- Cut, burn, scrape, injection, paper cut, thorn, sting, puncture
- Why so intense? Piercing the skin allows bacteria in
- Why don’t we like injections: pierce the skin

**Somatic pain**

- **Superficial somatic** structures include the skin, superficial fasciae, tendon sheath and periosteum
- **Deep somatic**: also periosteum, cancellous bone, muscle/tendon/ligament and blood vessels, deep fascia, joint capsules.
- Dull, ache, cramp, deep, nagging, poorly localized. BUT not the sharp intense paper cut, why? Skin barrier likely is intact, decreased threat of bacteria.
- **Psychosomatic/somatization**: an emotional or psychologic distress produces physical symptoms. Can be brief, recurring or forever
Neuropathic neurogenic

- Caused by damage or pathophysiologic changes of the peripheral or central nervous system: nerves or neurons in the brain
- This may mean the method of transmission and/or processing center from sensory inputs may be compromised (this could be a good clue, when things just don’t make sense)
- Burning, numb, tingling, sting, sharp, bright, lighting, or symptoms that don’t make a lot of sense.
- The injury could be:
  - Drug induced: chemotherapy
  - Metabolic: Diabetes, Multiple Sclerosis
  - Brought on by trauma: Carpal Tunnel, Spinal Cord
  - Others: Headache, Stroke, Traumatic Brain Injury
- Intensity could relate to danger you are in if nerves are in trouble
- Can lead to centralization (centralization sensitization)

Chronic Pain: Centralization (Central Sensitization)

- Changes seen in peripheral and central nervous systems
- The brain and spinal cord have become overly sensitive due to repetitive/prolonged stimuli
- Pain is worse, spreading, even small movement hurts, moves around, hurts if you think about it
- Example: Complex Regional Pain Syndrome
- Think off a car alarm that keeps going off.
- Something in peripheral tissue and/or brain is still sending out an alarm

Sources

Pain from Viscera

- Internal organs and heart
- Not well localized
  - There will be associated signs and symptoms: fever, chills, doesn’t change with rest
- Big time referral, why?
  - It may alert us to a visceral organ we can’t see or palpate (submarine analogy)

Sources

Chapter Three

Referred Pain (Red Flags | Special Questions)

- Differential Diagnosis is necessary for progression to direct access
- We treat musculoskeletal issues and screen for medical disease
- Use tools such as Patient Questionnaires and Body Diagrams to sort it out
- There’s probably an app for that
How to Assess Pain

On a scale of 0 to 10, with 0 being pain free, and 10 being the worst pain imaginable.

### Numeric Pain Index

Pick one and stick with it for the whole clinic if possible.

### Visual Analogue Scale

Make a mark indicating where your pain is.

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0 5 10 cm

Stages: Acute

- Relatively short lived: 0-2 weeks
- Pain usually localized and often an inflammatory response is going on
- Muscle strain, contusions, surgery, hospital or rehab inpatient services
- NSAIDS or narcotics depending on the injury
- Peripheral tissue and brain not necessarily same stage

### Significant mechanical, chemical, temperature data sent to brain

- Vision, auditory memory etc are recording/analyzing data

#### Treatment:
- AIDET,
- Pt. edu.,
- Circulation (Movement)
- Nutrition
- Interdisciplinary Consults

Impact of brain is significant

Can you calm down brain along with initiating tissue healing

Stages: Sub Acute

- 2 weeks to 6 months
- Multiple patient settings: tendinitis, impingement, back ache, ACL or Rotator Cuff rehab, TBL stroke
- Still in the healing process, and we do great work here on peripheral tissue/segments
- Ever thought "they should be further along". Don’t forget your AIDET

### Treatments:
- Continue AIDET
- Begin/continue tissue healing
- Continue pt. education will help brain. Topics include the role of circulation, nutrition, body mechanics
- Movement: helps cause healing brain, we are born to move
- Body Mechanics (to reduce tissue deformation especially in repetitive or prolonged postures)

Tissue and brain may not be in the same stage (refers to local work, spiritual, counseling)

The sooner you can impact alarms coming from the brain, the better the tissue will heal.

Stages: Chronic

- Persists past the expected physiologic time of healing: still significantly feeling it months later
- Diffuse pain
- Tissues may have changed, not for the better

### Chronic Pain Syndrome
- Physical / emotional overlay

#### Arthritis
- Neck/back pain
- Neuralgia
- Peripheral neuropathies
- Fibromyalgia
- Myofascial pain
- Spinal stenosis
- Complex Regional Pain Syndrome

### Treatment:
- Graded Motor Imagery to reset brain
- Fundamental tissue healing
- Reduce prolonged, repetitive postures
- Body mechanics

Why’d did the pain go chronic (why is there still an alarm going off)

Which alarm: tissue, brain, both

Is the tissue permanently changed; what modifications will help pt. improve function in spite of tissue changes

How to educate them and help with acceptance.
SINS  
Koury et al., 1994

- **Severity**: the intensity of the pain as related to functional activity. Pain scale, whatever they say it is.
- **Irritability**: the amount of activity it takes to bring the symptoms on and/or the time it takes to calm down after provoked. Impacts their function and your eval.
- **Nature**: what is the source of primary complaint.
- **Stage**: acute/subacute/chronic. Affects interventions.

Peripherial tissue and brain may be different on each point.

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**Graded Motor Imaging**  
G. Lorimer Moseley, David S. Bouter, Timothy B. Beames, Thomas J. Gilles

**3 Phases of Treatment**
- **Laterality**
- **Imagined Movement**
- **Mirror Box**

- Can be vulnerable to misuse
- Requires careful tailoring to individual patients
- Cannot exist alone without education, interdisciplinary support and an effective therapeutic relationship

http://www.gradedmotorimaging.com

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**GMI: Phase One**

**Laterality**

- **BEFORE** you move a limb, the brain distinguishes left from right in order to send commands to the correct limb
- Patient looks at images and just decides Left or Right which allows the very beginning of movement without risk of pain

**GMI: Phase Two**

**Imagined Movement**

- You are planning the movement and allowing input from areas of the brain WITHOUT moving a painful body part
- Also imagine more pleasant emotions, circumstances associated with movement
- Athletes utilize this and accept it as a part of enhancing their movement without risk to the body
**Mirror Box Therapy**

Looking in the mirror gives you the illusion you are looking at a hidden limb which is the painful limb.

Brain activation is less than actual movement but more compared to imagined movement.

It gives flexibility and creativity back to the brain and creates non-threatening neurotags with the painful tissue.

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**Effects of Sitting**

Sedentary Death Syndrome

23% of Americans achieve the CDC's physical activity standard.

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**What are the risks of sitting too much?**

Sitting will kill you, even if you exercise.

14 Proven Side Effects of Sitting All Day

Sitting is the new Tobacco.

Physical Inactivity: A Global Health Problem

World Health Organization

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**CNN**

Sitting is the new Tobacco.
MUSCLE DEGENERATION
Mushy abs
Tighter hips
Limp gluts

ORGAN DAMAGE
Heart disease
Diabetes
Colon cancer

BAD BACK
Inflexible spine
Disk damage

TROUBLE AT THE TOP
Foggy Brain
Strained Neck
Sore shoulders, neck

LEG DISORDERS
Poor circulation in legs
Soft bones

Sitting will kill you, even if you exercise?
If Sitting is the New Tobacco
Then movement is The Cure

20/20 Rule

Tips
- Use the 20/20 rule: for every 20 min of sitting, get moving for 20 sec
- Walk every chance you get even in 2–3 min increments
- Use your lunch hour to eat then walk, take a quick noon time Qi Gong tape
- Get a Fitbit or other step counter and challenge friends
- Put together your own Circulation Protocol

Summing it up for Treatment
- Nueromatrix Theory of Pain: Pain originates in the brain when input from the peripheral tissues, combined with areas of the brain, determines if you are in trouble and sends out an alarm.
- Patient Education: online “explain pain in 5 minutes”. At first they will think you are telling them it’s all in their head and this tutorial can help. Consider the Explain Pain techniques online as well as the books.
- Graded Motor Imaging. May be an excellent treatment option when movement is very painful or the patient is very fearful. Since it doesn’t take a lot of clinic time, combine it with pt. edu, reducing static/prolonged postures, body mechanics, manual techniques etc.
- Prolonged postures and sedentary behaviors may decrease circulation. A tissue that loses perfusion may begin to die send that data to the brain and the brain may send out an alarm: pain.
- Lifestyle matters: you can’t build a muscle on a pop tart

Stretches for Chair Sitters
- tight hips
- chest and shoulders
- neck
Treatment can’t

- Don’t rely on 2-3 hours of a HEP or treatment session each week to effect long term change on pain or function. In fact, try not to call it a home EXERCISE program. It should be more than what a personal trainer can give them. Teach them. Use the 20/20 rule: for every 20 min of sitting, get moving for 20 sec.
- Walk every chance you get especially in 2-3 min increments, not just once a day for 30 minutes
- Use your lunch hour to eat then walk, do a quick noon time Qi Gong tape. Keep an eye on whether the yoga helps them, encourage movement vs. static (muscle pumps)
- Get a Fitbit or other step counter and challenge friends
- Put together your own Circulation Protocol

Outcome Tools

Patient Specific Functional Scale (PSFS)

- Good Data for the knee, CS and LBP
- Quick, easy
- Provides you with some of your goals, especially those that are functional and meaningful to the patient
- Will help with Pay for Performance

Ask for at least 3 activities they need/want to resume

Treatment Encounter Note

- S: How did what you did last treatment work out, any new problems
- O: What did you see, what did you test, retest. What interventions did you do. Note there is the format of our CPT codes (jt mobs/STM goes in Manual 97140, vectors could go in Therapy or Neuromuscular Re-eds etc. then list of the tasks you did on the flow sheet under the correct CPT category
- A: Are they progressing to goals the way you expected or is something passing things up and slowing them down. Each treatment session should document the progress of at least one stated goal. Helps if you have a space for that on your daily note, that way you can “log” and allows you to write effective progress/DC notes no matter where you are in treatment sessions.
- P: Based on what you did today, what might be the first thing you or ask about on the next visit. Something you want to test, retest, implement, progress. This way you pick up exactly where you left off which should keep you going in the same direction towards successful and meaningful discharge.

References


Moayedi M, Davis K. Theories of pain: from specificity to gate control. *J Neurophysiology* 109: 5-12, 2013