Pain Management and the Opioid Epidemic

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Disclosure

I have nothing to disclose relative to this presentation
Objectives

• Review pain perception/anatomy
• Review medications for pain management including opioids
• Why certain medical conditions are prone to pain including traumatic brachial plexus palsy
• Identify the impact pain and medication has on therapeutic interventions
• Identify alternative strategies to help patients with pain management
Why?

- Licensure renewal in the state of Michigan requires **one hour** every renewal cycle relative to pain
- 20 millions health care dollars are spent annually on pain management
- Recent events in the news
  - Whitney Houston, Prince, etc.
- 36 million missed work in last year
- 83 million report loss of participation in ADL
- **44 people each day die** from prescription opioid overdose
- There are more deaths each year due to overdose than MVA
The Joint Commission, in collaboration with the University of Wisconsin, Madison, has developed pain management standards for accredited ambulatory care facilities, behavioral healthcare organizations, critical access hospitals, home care providers, hospitals, office-based surgery practices, and long-term care providers.

The standards require organizations to:

- Recognize the right of patients to appropriate assessment and management of pain.
- Screen patients for pain during their initial assessment and, when clinically required, during ongoing, periodic re-assessments.
- Educate patients suffering from pain and their families about pain management as a part of care. (The Joint Commission, 2013)
The Joint Commission’s pain guidelines further state that:

– Clinicians must be competent in the assessment and management of pain.

– Pain should not interfere with optimal level of function or rehabilitation.

– Pain and symptom management must be included in discharge planning. (The Joint Commission, 2013)
Introduction to Pain*

- 5 minute introduction

https://www.youtube.com/watch?v=C_3phB93rvl
Length of Pain

- **Acute**
  - Less than 3 months

- **Chronic**
  - Greater than 3 months

- **Long term**

https://www.google.com/search?rlz=1C1GGRV_enUS750US750&biw=1159&bih=535&tbnm=isch&sa=1&q=jokes+about+pain&oq=jokes+about+pain&gs_l=psy-ab.3..0i4.45441.50665.0.52741.29.23.0.0.0.0.152.2167.11j10.22.0....0...1.1.64.psy-ab.11.17.1737.0...0i67k1.152.V7AIWV7PSSQ#imgrc=lers9YdCOhHFTM:
Types of Pain

• Nociceptive Pain
  Somatic
  • Normal pain due to trauma or injury that fades once injury heals or stimulus is taken away
  Visceral Pain
  • Internal pain (organs)

• Neuropathic Pain
  – Results from damage to nerves where patient experiences burning, tingling, electrical impulses
  – Continues after patient “heals”
  – Common conditions (post herpetic neuralgia, diabetic neuropathy, sciatica, brachial plexus injury, amputation, etc.)
Women are more likely than men to experience depression due to larger hippocampus with more synapses from the amygdala.

Stimulus sent along peripheral nerves and enter the dorsal horn of the spinal cord. Signal travels across spinal cord. Signals then travel to the thalamus or amygdala. Areas of the parietal lobe, anterior cingulate cortex, insular cortex and somatosensory cortex are triggered which result in processing of the pain.

https://www.researchgate.net/profile/Xianguo_Liu/publication/278659775/figure/fig3/AS:267515016249373@1440791958318/Figure-6-86-Anatomy-of-the-pain-pathway-Primary-afferent-nociceptors-convey-noxious.png
Pain Perception

- Pain Stimulus
- Reception (nerve ending perceives)
- Transmission (nerve sends signals via CNS)
- Pain Center Reception (brain perceives for further processing)
- Nociceptive pathways are used to transmit pain signals

Nerve Pain

• Brachial Plexus Palsy: Avulsion

Pain perception greater in patients who have sustained an avulsion as the dorsal root ganglion is affected (pre-ganglionic injury)
Afferent vs. Efferent

**Afferent** *(green)*
pathways send signals to the brain from the body *(Amputee) (BP)*

**Efferent** *(blue)*
pathways carry signals from the brain to the body

http://www.journals.elsevierhealth.com/cms/attachment/2037282752/2051789524/gr1_lrg.jpg

http://www.journals.elsevierhealth.com/cms/attachment/2037282752/2051789524/gr1_lrg.jpg
Signs of Pain*

What we can see

• Non-verbal
• Facial expressions
• Posturing
• Restlessness
• Rubbing
• Trembling
• Verbal complaints
Symptoms of Pain*

What patient experiences (cannot observe)

• Sharp, aching, throbbing, tight sensation
• Pinching, shooting, sore, or piercing sensation
• Constant, tender, tight, or cramping sensations
• Splitting, pounding, pulsating, or squeezing
Pain Affects

• Patient
• Family
• Society (work, health care spending, disability)
• Quality of Life
• Pain is subjective

Pain and Culture*

• Minorities are at risk of poor pain management
• Some ethnic or cultural groups have tendencies to over or under express pain
• Gender differences with pain prevalence due to physical differences including the brain (larger amygdala and more synapses to hippocampus)
Pain Management Paradigm

• **Begin with conservative**
• Educate patient to engage, elicit their help, and establish realistic expectations
• Therapy Options
  – *TENS*
• Medication Options
• Injections (facet, epidural, nerve)
  – *Nerve block*
  – *Medical branch block*
• Implantable Devices
  – *Spinal Cord Stimulators*
• Surgical Options
  – *Nerve ablations*
Interventional Approaches

Neuro-Stimulation Techniques
- TENS
- Epidural stimulation
- Brain and spinal cord stimulation
- Peripheral nerve stimulators
- Intrathecal analgesia
- Trigger point injections

Nerve Blocks
- Local anesthetics
- Neurolytic solutions

Surgical Techniques
- Nerve decompression
- Neurosurgical techniques
- Orthopedic techniques
Pain Medications*

- Tranquilizers (benzodiazepines)
  - Pain killers (opioids)
    - Prescription
      - **SHORT ACTING**
        - Codeine
        - Morphine
        - Oxycodone
        - Hydromorphone
        - Combination
      - **LONG ACTING**
        - Morphine
        - Methadone
        - Oxycodone
        - Fentanyl
    - Illegal
      - Heroin
      - Cocaine

[Image]

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Opioids


• Lt Gov Brian Calley signs into law overdose reversal medications for use in emergency cases of overdose

• Opioid Safety PSA
  – [https://www.youtube.com/watch?v=acetjaguaRE](https://www.youtube.com/watch?v=acetjaguaRE)
Reduction of Epidemic$_3$

- DHHS in Michigan was awarded $17 Million from federal grant
- Objectives:
  - The Michigan Automated Prescription System
  - Development of a statewide awareness campaign
  - Michigan-OPEN research through the University of Michigan
  - Medication Assisted Treatment (MAT)
  - Prevention services and strategies
  - Improving the availability of Naloxone
  - Increasing peer supports, tribal supports, and support of law enforcement
  - Providing a new model for re-entry services
  - Collaboration with university partners on re-entry, evaluation, and research opportunities
Opioids in Michigan

• “From 1999 to 2014, Michigan saw a four-fold increase in unintentional fatal drug poisonings, and the state was ranked 10th in the nation in per capita prescribing rates of opioid pain relievers in 2012.”
• Deaths: 1999=99 and 2016=2,335 (>auto)
• 11.4 million rx in 2015 = 115 opioids per 100 people
• Recent updates to the MAPS (Michigan Automated Prescription System)
Medication Option

• Opioids
• Non-Opioids
  – Acetaminophen
  – Salicylates
  – NSAIDS (non-steroidal anti inflammatory)
  – Tramadol
• Adjuvants
  – Anti-depressants
  – Anti-convulsants
  – Steroids
  – Muscle relaxants
  – Topical
Influences of Pain Medication

Opioids
• **Addiction** (Agitation, abdominal cramping, diarrhea, rhinorrhea, piloerection, return of pain)
• Drowsiness
• Constipation
• Nausea / Vomiting
• Itching
• Respiratory depression
• Decreased concentration
• Pruritus
• Urinary retention
• Myoclonus

Non-Opioids
• **Gastrointestinal effects**
  – Dyspepsia
  – Renal dysfunction
  – Prolonged bleeding time
  – Hypertension
Side Effects of Pain Medications

Side Effects of Pain Medications include:

- **Tongue**
  - Antacids, antibiotics, hormones, anti-inflammatory, diuretics, anti-viral, blood pressure, allergy, cholesterol lowering, and antidepressant drugs can alter taste.

- **Esophagus**
  - Pain, anti-inflammatory, and antibiotics can cause pain with swallowing, which can lead to inflammation of the esophagus.

- **Gall Bladder**
  - Hormones and cholesterol lowering drugs can cause the formation of gallstones.

- **Liver**
  - Pain, anti-inflammatory, cholesterol lowering, and anti-viral drugs can cause liver dysfunction.

- **Large Intestine**
  - Antibiotics, antacids, pain and anti-inflammatory drugs can interfere with proper function and lead to IBS and colitis.
  - Gas, bloating, diarrhea and constipation can occur with the use of antibiotics, antacids, laxatives, hormone, blood pressure, diabetes, cholesterol lowering and anti-depressant medications.

- **Pancreas**
  - Anti-inflammatory, anti-viral and pain medications can cause indigestion and inflammation of the pancreas.

- **Small Intestine**
  - Pain, anti-inflammatory, antibiotics, and oral contraceptives can interrupt absorption and digestion.

Chemotherapy drugs can decrease saliva production.

Chemotherapy, pain, anti-inflammatory, antibiotics, acid reflux, antidepressants, and hormone medications can destroy the lining of the stomach.

Antidepressants can alter gut motility. Antacids and antibiotics can alter the pH of the gut.

https://i.ytimg.com/vi/sD-qc9Ts_sQ/hq720.jpg
Pain Assessment Scales

Resources
Rehabilitation Measures Data Base
http://www.rehabmeasures.org/rehabweb/links.aspx
Wong-Baker Faces

Pain Quality Assessments*

- Neuropathic Pain Questionnaire (NPQ)
- Pain Body Diagram (Color)
Functional Impact*

- Brief Pain Inventory (BPI)
- Pain Outcomes Questionnaire - VA
Sensory, Affective, Cognitive, Behavioral Pain Assessments*

- McGill Pain Questionnaire (MPQ)
- Adults
- Mark areas of pain
DASH / Quick DASH

- [http://dash.iwh.on.ca/system/files/dash_questionnaire_2010.pdf](http://dash.iwh.on.ca/system/files/dash_questionnaire_2010.pdf)
- 30 items
- For adults
Psychological Assessment*

**Comorbidities**
- Mood disorders (73.1%)
- Major depression (62%)
- Bipolar disorder (11.1%)
- Anxiety disorder (55.6%)
- Panic disorder (28.7%)
- **PTSD (21.3%)**
- Social phobia (19.4%)
- OCD (6.5%)
Suicide*

Patients with pain are at risk
OT Role In Chronic Pain Management
Interdisciplinary Pain Programs*

- Team approach to pain management
- Integrates separate disciplines into single consultation
- Patient is involved in care plan
- Holistic approach
- View all aspects of patient care
- Disciplines step out of their silos
Modalities/Devices/Equipment/Therapy for Pain Management

- TENS
- Hot/Cold Packs
- Positioning
- Hydrotherapy
- Ultrasound
- Stretching
- Strengthening
- Massage
- Laser
- Physiotouch

https://www.google.com/search?rlz=1C1GGRV_enUS750US750&biw=1078&bih=535&tbm=isch&sa=1&q=image+of+therapy+for+pain&oq=image+of+therapy+for+pain&gs_l=psy-ab.3...5582.7351.0.8750.12.12.0.0.0.0.254.1476.0j8j1.9.0....0...1.1.64.psy-ab..4.0....0.p0jxtbHL5w#imgrc=qwIFeBExgbl_SM:

https://www.google.com/search?rlz=1C1GGRV_enUS750US750&biw=1078&bih=535&tbm=isch&sa=1&q=image+of+therapy+for+pain&oq=image+of+therapy+for+pain&gs_l=psy-ab.3...5582.7351.0.8750.12.12.0.0.0.0.254.1476.0j8j1.9.0....0...1.1.64.psy-ab..4.0....0.p0jxtbHL5w#imgrc=xhp-0IPIEfj7-M:

BRACHIAL PLEXUS PROGRAM

MICHIGAN MEDICINE
Pain Affects Participation

• Self Care
• Employment
• Leisure
• Driving
• Sleeping

https://www.google.com/search?q=image+of+pain&rlz=1C1GGRV_enUS750US750&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwiP0dmxxcbWAhVV4GMKHUXzAqsQsAQUw&bih=1159&biw=535#imgrc=6tM9nKOTWN4tAM:
Pain Affects Therapeutic Interventions

- Side effects of medication
  - Confusion
  - Constipation
  - Fatigue
  - Lethargy
  - Fear of Pain
  - Anxiety
  - Irritability

- Lack of Sleep

https://www.google.com/search?rlz=1C1GGRV_enUS750US750&tbm=isch&q=image+of+pain&chips=q:image+of+pain,g_9:chronic+pain,g_2:funny&sa=X&ved=0ahUKEwjb6JHk y8bWAhXiiFQKHTskCREQ4IYLCgA&biw=1078&bih=535&dpr=1.25#imgrc=JLWH4k0uyA0 ndM:
Activities for Pain Management

• Distraction
• Leisure
• Music*
• Calming Techniques*
• Relaxation Techniques*
• Diaphragmatic Breathing*
• Physical Activity*
• Pacing of Activities*

My body needs a refresh button!

https://www.google.com/search?rlz=1C1GGRV_enUS750US750&tbm=isch&q=image+of+pain&chips=q:image+of+pain,g_9:chronic+pain,g_2:funny&sa=X&ved=0ahUKEwjb6Hkyy8bWAhWy6W4KHskCREw4lCgA&biw=1078&bih=535&dpr=1.25#imgrc=xoqDlLSAq79bIM:
Self Management

- Pain Diaries*
- Nutrition*
- Exercise*
- Sleep*
- Management of Emotions*
- Pacing*
- Rest
- Tobacco Cessation*
- Social Activities*

https://www.google.com/search?rlz=1C1GGRV_enUS750US750&tbm=isch&q=image+of+pain&chips=q:image+of+pain,g_9:chronic+pain,g_2:funny&sa=X&ved=0ahUKEwj6JHky8bWAhXiFQKHTskCREQ4IYILCgA&biw=1078&bih=535&dpr=1.25#imgrc=panhCG7SNfseiM
Alternative Medicine

- Acupuncture
- Diaphragmatic Breathing
- Guided Imagery
- **Herbal Products**
- Meditation
- Rolfing
- Yoga
- Moxibustion*
- Cupping/scraping*
- Chinese herbology*
- Tai Chi*
- Acupressure*
- **Nutrition***

Ginger, Coffee, Olive Oil, Salmon, Turmeric, Red Grapes, Thyme.
Psychotherapeutic Approaches

- Psychotherapy
- Cognitive Behavioral Therapy (CBT)
  - Will fix problem vs meds which mask problem
- Biofeedback
- Relaxation
- Stress Management
- Psychiatric Treatment of Mental Illness
- ACT (Acceptance and Commitment Therapy)*
- Imagery*
- Hypnosis*
- Meditation*
- Distraction*
Lifestyle Redesign (Simon)(2)

• 45 patients with lumbago/myalgia/complex regional pain syndrome mean age 42.6 yr, 32 female, 23 white received mean of 18 weeks of 1:1 OT (9.04 sessions) using the module.

• COPM improvement in performance and satisfaction

• SF-36 improvement in QOL (physical health, emotional problems, social functioning)

• PESQ improved ability to engage in functional activity

• BPI no significant changes however trended toward decrease in average/worst pain, pain interference/pain severity
Modules of Lifestyle Redesign

1. **Self Care and Health Management Routine**
   1. Eating routines
   2. Sleeping routines
   3. Physical activity
   4. Stress and mood management
   5. Medication management
   6. Energy and fatigue management
   7. Time management

2. **Community Integration**
   1. Transportation
   2. Socialization
   3. Paid or unpaid work

3. **General Pain Health Management**
   1. Establishing a baseline
   2. Pain “flare up” planning
   3. Assertive communication
   4. Pain communication
Theater-Based Community Programs

- 7 Veterans with Substance Use Disorders and 6/7 with Severe Mental Illness
- 6 week program (rehearsal 3 hours, 3 times a week) run by OT, director, writer, actor, and art therapist
- Provides social and emotional engagement opportunities
- Play based on seven Greek myths that touch on addiction
- Data collection 6 week prior, 6 week and 6 month after intervention
- Drug screen, Occupational Circumstances Assessment and Rating Scale (OCAIRS), General Self Efficacy Scale (GSE)
- OCAIRS improved at 6 week but no change at 6 month
- GSE no change
- 91% attendance rate
- Drug Use: 3 of 7 none before/during/after program; 3 pre program; 3 during intervention; 1 post intervention
# Pain Diaries*

<table>
<thead>
<tr>
<th>Date &amp; time</th>
<th>Pain score (0 to 10)*</th>
<th>Where pain is and how it feels</th>
<th>What I was doing when it began</th>
<th>Drug name and amount of medicine taken</th>
<th>Non-drug techniques I tried</th>
<th>How long the pain lasted/relief score</th>
<th>Side effects/other notes</th>
</tr>
</thead>
</table>

*0 = no pain; 10 = worst possible pain
Mirror Therapy

• Mirror Therapy
  – Rang of Motion Limitation
  – Stroke
  – Amputee
  – Brachial plexus injury

https://www.google.com/search?q=image+of+mirror+therapy&espv=2&biw=1684&bih=1061&tbnid=isch&tbo=u&source=univ&sa=X&ved=0CBQwQsARqFQoTCMbp3PLQtcgCFceMDQodpSolfw&dpr=0.67#imgrc=OaF87Xd14gXRPM93A
Documentation

• Every note
  – Location of pain
  – Level of pain
  – Intensity of pain
  – Intervention provided (pre and post rating)
• Patient education
• Therapy strategies and response
• Pre- and Post- assessments
• Improvements in daily living function (include sleep)
• Medicare has guidelines
• CMS has guidelines
• Joint commission
Resources

• Substance abuse and mental health in Michigan: [www.michigan.gov/bhrecovery](http://www.michigan.gov/bhrecovery)
• Department of Health and Human Resources
• NBCOT ([http://www.nbcot.org/](http://www.nbcot.org/))
• NIH
• CMS
• AOTA
References

* Coping with Chronic Pain – Comprehensive Pain Management by R.S. Hullon, MD, JD


References


5. Robinson, K; Kennedy, N; Harmon, D. Is *Occupational Therapy Adequately Meeting the Needs of Patients with Chronic Pain*. AJOT. 2011: 65 (1); 106-113.
References

