MANAGING THE COMPLEXITIES OF TREATING OLDER ADULTS WITH LONGSTANDING CHRONIC PAIN OR OPIOID USE DISORDER WITH BUPRENORPHINE AND INTEGRATIVE HEALTH

BUPE2021 CONFERENCE
OCTOBER 22, 2021

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DISCLOSURE

The planners and speakers for this session have nothing to disclose.

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OBJECTIVES

1. Understand risk stratification and monitoring of older adult patients using opioid pharmacotherapy for chronic pain, especially in patients with opioid tolerance who may benefit from buprenorphine—using realistic clinical case scenarios.
2. Describe the current public health statistics on chronic pain, its overlap with opioid use disorder (OUD), with a special focus on older adults.
3. Evaluate pharmacotherapeutic and integrative health options in pain and OUD management, including acupuncture, meditation, & hypnosis.

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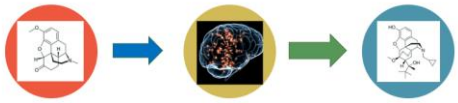
RETHINKING CHRONIC PAIN RX



FULL OPIOID AGONIST | CENTRAL PAIN PROCESSING & SENSITIZATION | PARTIAL OPIOID AGONIST

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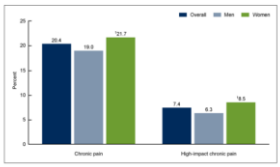
CHRONIC PAIN STATS

- Overall, the prevalence of chronic pain was 20.4%, and the prevalence of high-impact chronic pain was 7.4%.
- Women were more likely to have chronic pain (21.7%) and high-impact chronic pain (8.5%) compared with men (19.0% and 6.3%, respectively).

Figure 1. Percentage of adults aged 18 and over with chronic pain and high-impact chronic pain in the past 3 months, overall and by sex: United States, 2019



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CDC CLARIFIES GUIDELINES IN 2019

Perspective FREE PREVIEW

No Shortcuts to Safer Opioid Prescribing

Deborah Dowell, M.D., M.P.H., Tamara Haegerich, Ph.D., and Roger Chou, M.D.

April 24, 2019
DOI: 10.1056/

Even guideline-concordant care can be challenging. Implementing recommendations with individual patients takes time and effort. An unintended consequence of expecting clinicians to mitigate risks of high-dose opioids is that rather than caring for patients receiving high dosages or engaging and supporting patients in efforts to taper their dosage, some clinicians may find it easier to refer or dismiss patients from care. Clinicians might universally stop prescribing opioids, even in situations in which the benefits might outweigh their risks. Such

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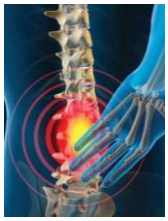
PAIN—ETYMOLOGY & FEATURES



❑An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.

❑Six key features:

➢Pain is always a personal experience that is influenced to varying degrees by biological, psychological, and social factors.

➢Pain and nociception are different phenomena → Pain cannot be inferred solely from activity in sensory neurons.

➢Through their life experiences, individuals learn the concept of pain.

➢A person's report of an experience as pain should be respected.

➢Although pain usually serves an adaptive role, it may have adverse effects on function and social and psychological well-being.

➢Verbal description is only one of several behaviors to express pain; inability to communicate does not negate the possibility that a human or a nonhuman animal experiences pain.

https://www.iasp-pain.org/Education/Content.aspx

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EVALUATING CHRONIC PAIN

❑Best evaluated using a validated assessment – don't just focus on the pain scale!

❑Consider a PEG assessment:
Pain – **E**njoyment – **G**eneral activity

1. What number best describes your pain on average in the past week?

0 1 2 3 4 5 6 7 8 9 10
No Pain — Pain as bad as you can imagine

2. What number best describes how, during the past week, pain has interfered with your enjoyment of life?

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

3. What number best describes how, during the past week, pain has interfered with your general activity?

0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely interferes

Krebs, E. and Initial Validation of the PEG, a Three-item Scale Assessing Pain Intensity E., Lorenz, K. A., Bair, M. J., Damush, T. M., Wu, J., Sutherland, J. M., Asch S, Kroenke, K. (2009). Development and Interference: Journal of General Internal Medicine, 24(6), 733–738.

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CLINICAL SCENARIO-1

HPI: Pleasant 70 y/o female with moderate lumbar stenosis with advanced lumbar spine degenerative joint disease, fibromyalgia, GERD, hypertension, hyperlipidemia (on statin) who presents for an evaluation for chronic pain management. Reports having left-sided sciatica pain radiating behind her left leg. Had an MRI about 2 months prior to initial evaluation that confirmed the above including an L5-S1 broad-based disc protrusion. Former tobacco user, no alcohol or illicit substance use. Pt had her hydrocodone reduced from 10/325mg by prior physician, currently on hydrocodone 7.5/325mg TID with pain level of 7.

Examination reveals intact strength without any neurologic findings. Exquisite tenderness of the lower spine and paraspinals.

Records requested. PDMP is consistent with self report.

Urine toxicology testing: +opioids

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CLINICAL SCENARIO-1: SCREENING & RISK ASSESSMENT

70 y/o F screenings reveal: PEG: 7/8/6 (avg. 7) on hydrocodone/APA 7.5/325mg TID + ibuprofen 600mg TID.

ORT: 0
PHQ-9: 2
GAD-7: 2
AUDIT-C: 0
DAST-10: 0

- What are the best treatment options for her?

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CLINICAL SCENARIO-1 (PRE-COVID19)

- Pain safety agreement signed & initiated
- Patient signs an Opioid Consent
- Rx: hydrocodone/APAP 10/325mg TID (prior regimen)
- Discontinuation of ibuprofen (or gradual reduction given her health risks)
- Consider physical therapy

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UNDERSTANDING OPIOID USE DISORDER

John A. Hopper, MD, DFASAM, FAAP, FACP

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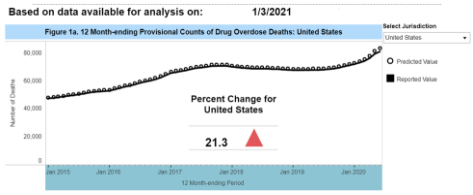
Vital Statistics Rapid Release
Provisional Drug Overdose Death Counts



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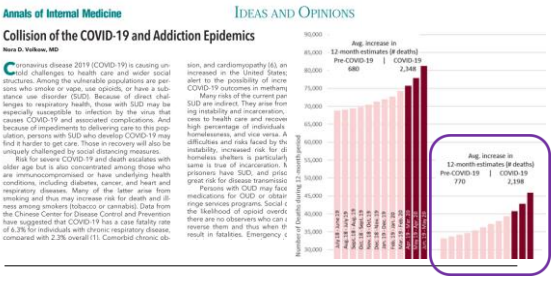

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THE INTERSECTION OF CHRONIC PAIN & OPIOID MISUSE/USE DISORDER

- What is the prevalence of Opioid Misuse/Use Disorder (OUD) in patients who suffer with chronic pain?
  - Unclear, as limited evidence, ambiguous terminology, conflicting results.
  - A systematic review of 38 studies suggests patients with chronic pain:

21% to 29% have **opioid misuse**

8% to 12% have **OUD**

Vowles KE, McEntee ML, Julnes PS, Frohe T, Ney JP, van der Goes DN. Rates of opioid misuse, abuse, and addiction in chronic pain: a systematic review and data synthesis. *Pain*. 2015;156(4):569-576.

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THE NEUROBIOLOGY OF ADDICTION

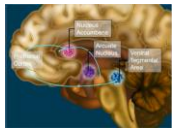
❑**Addiction is a chronic, relapsing disorder characterized by a compulsive drive to a take a drug (or substance) despite:**

- serious consequences
- Loss of control over intake
- And the emergence of a negative emotional state during abstinence

→leads to profound behavioral disruptions

→The NA and VTA are the pleasure/reward pathways of the brain are "hijacked" by substances.

→Drugs impact many neuronal circuits—processing rewarding stimuli, negative emotions, interoception, decision-making, and cognitive control—turns drug use into a compulsive behavior.



ASAM American Society of Addiction Medicine

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DSM-5 CRITERIA - OUD

Severity level:

Mild: 2-3 symptoms

Moderate: 4-5 symptoms

Severe: 6 or more symptoms

DSM-5 Criteria for Diagnosis of Opioid Use Disorder

Diagnostic Criteria*

Check all that apply	
	Opioids are often taken in larger amounts or over a longer period of time than intended.
	There is a persistent desire or unsuccessful efforts to cut down or control opioid use.
	A great deal of time is spent in activities necessary to obtain the opioid, use the opioid, or recover from its effects.
	Craving, or a strong desire to use opioids.
	Recurrent opioid use resulting in failure to fulfill major role obligations at work, school or home.
	Continued opioid use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of opioids.
	Important social, occupational or recreational activities are given up or reduced because of opioid use.
	Recurrent opioid use in situations in which it is physically hazardous
	Continued use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by opioids.
	*Tolerance, as defined by either of the following: (a) a need for markedly increased amounts of opioids to achieve intoxication or desired effect (b) markedly diminished effect with continued use of the same amount of an opioid
	*Withdrawal, as manifested by either of the following: (a) the characteristic opioid withdrawal syndrome (b) the same (or a closely related) substance are taken to relieve or avoid withdrawal symptoms

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MEDICATIONS TO TREAT OPIOID USE DISORDER (MOUD) AND PAIN

❑Requires a special Drug Enforcement Agency (DEA) X waiver to prescribe (DATA 2000)

❑Referred to as Medication-assisted Treatment (MAT)→Medication for Addiction Treatment (MAT)

❑Buprenorphine/naloxone (Suboxone®) is FDA approved for treating OUD.

❑Lower risk of abuse potential - contains both buprenorphine & naloxone. Naloxone is an opioid antagonist (Narcan® – an opioid overdose reversal agent).

❑Mechanism of action: partial opioid agonist therapy that binds to the pain receptors (mu receptors) with a safer profile. Caution: hypoxemia/COPD

❑Greater acceptance of using buprenorphine/naloxone **OFF LABEL** for chronic pain.

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RISK STRATIFICATION TOOLS

- ❑SOAPP 8® *versus*
- ❑Opioid Risk Tool
- ❑Screen for Depression & Anxiety (PHQ9/GAD7)
- ❑Screen for alcohol use disorder (AUDIT-C)
- ❑Screen with Drug Abuse Screening Test (DAST-10)

Opioid Risk Tool

This tool should be administered to patients upon an initial visit prior to beginning opioid therapy for pain management. A score of 3 or lower indicates low risk for future opioid abuse, a score of 4 to 7 indicates moderate risk for opioid abuse, and a score of 8 or higher indicates a high risk for opioid abuse.

Mark each box that applies	Female	Male
Family history of substance abuse		
Alcohol	1	3
Illegal drugs	2	3
Rx drugs	4	4
Personal history of substance abuse		
Alcohol	3	3
Illegal drugs	4	4
Rx drugs	5	5
Age between 16—45 years	1	1
History of preadolescent sexual abuse	3	0
Psychological disease		
ADD, OCD, bipolar, schizophrenia	2	2
Depression	1	1
Scoring totals		

Webster LR, Webster R. Predicting aberrant behaviors in Opioid-treated patients: preliminary validation of the Opioid risk too. Pain Med. 2005;6 (6) : 432

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FDA APPROVED BUPRENORPHINE*FOR PAIN— NO X WAIVER NEEDED.

Transdermal buprenorphine	Buccal Buprenorphine films	Buprenorphine/naloxone sublingual tabs/films
Marketed as Butrans patch	Marketed as Belbuca	*Buprenorphine/naloxone--used off label for pain (avoid F11.20 ICD10 code)
Dosed every 7 days (patch rotation)	Dosed q12hrs	Dosed 2/0.5mg TID/QID for pain
MAX: 20mcg transdermal patch	MAX: 900mcg film	MAX: 8/2 mg TID (unusual)
QTc prolongation, rash, N/V, seizures, respiratory depression	QTc prolongation, N/V, Seizures, Respiratory Depression	Elevated LFTs, nausea, headaches
$305-$810 *Requires Prior Auth	$314-$922 *Requires Prior Auth	$119-$289 *Monotherapy bupe requires Prior Auth

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TREATING PAIN IN OLDER ADULTS

Juliette Perzhinsky, MD, MSc, FACP
Associate Professor, Central Michigan University

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CLINICAL SCENARIO-1 (COVID-19)

Patient follows up via telehealth at onset of COVID19 pandemic for 3 months. She is unable to be with relatives or attend church. She begins running short on her hydrocodone script by 3-4 days. Admits to taking additional pills at night due to increased pain. States pain is at 7-9/10. GAD7=6.
Start duloxetine 30mg daily

A few months later as the in-clinic operations resume, pt returns for first in-clinic visit with persisting pain.
Urine toxicology: +Opiates, +Oxycodone. Patient reports no other opioid use.

GCMS is consistent with in office testing.

Topical Diclofenac is added.

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WHY NOT PREGABALIN?

12-19-2019 FDA Drug Safety Communication

What safety concern is FDA announcing?

The U.S. Food and Drug Administration (FDA) is warning that serious breathing difficulties may occur in patients using gabapentin (Neurontin, Gralise, Horizant) or pregabalin (Lyrica, Lyrica CR) who have respiratory risk factors. These include the use of opioid pain medicines and other drugs that depress the central nervous system, and conditions such as chronic obstructive pulmonary disease (COPD) that reduce lung function. The elderly are also at higher risk.

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ARE NSAIDS THE ANSWER?

- ❑Not according to the FDA
- ❑A large number of studies support the finding that NSAIDs cause an increased risk of serious cardiovascular thrombotic events, Estimates of increased RR range from 10% to 50%.
- ❑Several observational studies found a significant cardiovascular risk within days to weeks of NSAID initiation. Some data also showed a higher risk with longer NSAID treatment.
- ❑There are observational data indicating that the thrombotic cardiovascular risk from NSAID use is dose-related. There is also some evidence of this dose-response effect from clinical trials of celecoxib.
- ❑**AVOID NSAIDS in pts on ASA/Coumadin/NOAC therapy**

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CLINICAL SCENARIO-1 TRANSITION TO BUPE TX

❑Due to her worsening pain despite titration of hydrocodone and augmentation with other therapeutic options, a discussion ensues. Reviewed concerns over hyperalgesia leading to opioid misuse and to consider switching her to a Butrans 10mcg patch. An expedited prior auth is approved.

❑EKG obtained: NSR, QTc 380ms

❑Patient instructed start the patch 24 hours AFTER her last dose of hydrocodone & to use scheduled acetaminophen with lidocaine patches.

❑ Side effects discussed including nausea and risk of rash with transdermal buprenorphine patch

❑Patient returns in 2 weeks with improvement in pain to 3-4.
Reports that she was nauseated for the first few days, but it resolved.

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CLINICAL SCENARIO-1 –FINAL COURSE

❑Patient follows up with increasing in pain, UDS shows bupe and opiates, reports to taking hydrocodone from a friend while wearing the patch due to increased pain.

❑Pt also reports opioid craving and asks to "try that medication that helps people get off norco." But she is not interested in seeing a counselor for any help. An emphatic discussion ensues about concerns with honest, open communication in a non-judgmental manner.

❑Discussed treatment option of transitioning to buprenorphine/naloxone 4/1mg films BID, then a week later increase to 8/2mg BID due to lack of analgesic effect, which initially helped her pain. Pt is able to repeat instructions on how to use the films.

❑Patient declines returning in one week as she doesn't feel the buprenorphine is helping her pain. She politely declines any adjustment or referrals – politely states she will find another pain clinic that will put her back on hydrocodone.

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CLINICAL SCENARIO-2 INTRO

HPI: 73 year-old female with hypertension, COPD, depression, chronic low back pain with radiation down the L leg, cervicalgia, remote history of alcohol use disorder (but still occasionally drinks once a month on self report), former tobacco user, who presents to establish care for pain management. Pt was previously on methadone 10mg BID and oxycodone/APAP 10/325mg BID, but due to an abnormal heart rhythm, the methadone was stopped. Oxycodone dose kept at TID and pt started taking OTC Naprosyn for worsening pain. No adjustment in regimen. Transferred care due to being in severe pain.

On exam, musculoskeletal exam reveals limited cervical and spine ROM, intact reflexes and strength, pt with depressed and tearful affect.

PEG = 10/10/10
Urine toxicology: +OXY (GCMS consistent)
Outside records requested including imaging reports.

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CLINICAL SCENARIO-2 SCREENINGS

PHQ-9: 17

GAD-7: 11

AUDIT-C: 1

DAST-10: 0

ORT: 4 (h/o AUD, dx of depression)

Pain agreement and opioid consent signed.

Medication adjustment is made as follows:

- Oxycodone/APAP increased to 4 times a day PRN pain
- Duloxetine 20mg daily prescribed
- Topical diclofenac prescribed
- OTC NSAIDs discontinued

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CLINICAL SCENARIO-2

Patient returns for close, ongoing follow up. Pain level at an 8/10 initially, but pt was unable to tolerate the duloxetine due to stomach upset and cramping, so she discontinued it. Clinically more depressed and encouraged to follow up with a therapist and consider an SSRI (escitalopram). Pt agreeable. At subsequent visit, pain level is back to 10/10 and pt in distress. UDS testing and PDMP checks are consistent.

Reviewed MRI report from two years prior that confirms Cervical Spondylosis with broad-based disc osteophyte complexes. Severe right and moderate left foraminal narrowing C4-C5 and C6-C7.

Repeat MRI imaging ordered and discussion for opioid conversion as pt has worsening pain despite dose adjustment two months prior. Conversion to long-acting opioid deemed too high risk with her COPD. Pt is concerned that even though it's been 4 months, she feels like she is still trying to cope with being off methadone. Declines injection referral.

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CLINICAL SCENARIO-2 CONVERSION TO BUCCAL BUPE

Within 2 weeks, patient returns with her adult daughter to discuss opioid conversion. Buprenophine buccal films discussed and expedited prior authorization placed. Pt initiated on buccal buprenorphine 450 mcg BID -- a taper off oxycodone/APAP is developed with treatment of withdrawal symptoms and pain using non-opioid analgesic agents for the 24-48 hours after she tapers off the oxycodone. Family is available to support her through the conversion..

Patient transitions to buccal buprenorphine with notable improvement in pain with ultimate titration to 750mcg BID.

Follow up MRI imaging confirms more moderate spine stenosis and compressive myelopathy of the spine. Patient's pain level is up to a 9/10 and asks if the buprenorphine can be increased to a higher dose (900mcg BID). Patient referred to neurosurgery and again encouraged to make an appointment with a behavioral health therapist for integrative treatment options. Red flag symptoms discussed & pt denied.

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RECAP ON CLINICAL CASES

John A Hopper, MD, DFASAM, FAAP, FACP

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CLINICAL SCENARIO-1 REVIEW

70 y/o female with moderate lumbar stenosis with advanced lumbar spine degenerative joint disease, fibromyalgia, GERD, hypertension, hyperlipidemia (on statin) who presents for an evaluation for chronic pain management.

- ❑Patient initially was misusing opioid therapy due to increased pain, declined any interventions including physical therapy.
- ❑Patient initially responds to buprenorphine, but then experiences a lack of benefit
  - ❑Why the plateau in response?
  - ❑What other options are available?

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CLINICAL SCENARIO 2 - REVIEW

73 year-old female with hypertension, COPD, depression, chronic low back pain with radiation down the L leg, cervicalgia, remote history of alcohol use disorder (but still occasionally drinks once a month on self report), former tobacco user, who presents to establish care for pain management.

- ❑Transitioned off methadone due to "abnormal heart rhythm"
- ❑Converted buprenorphine buccal films, with addition of other modalities.
  - ❑Willing to undergo some but not all interventions
  - ❑The progression of her spine disease warrants a surgical evaluation.
- ❑What are the options if her pain does not improve?

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OFF LABEL BUPRENORPHINE FOR PAIN

- Easiest to do if patient is already on buccal buprenorphine
- Generally well tolerated for patients dependent on full agonist therapy
- Approval and prior authorization varies widely based on insurance
- Consider getting full waiver training to prescribe buprenorphine

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DIALOGUE EXAMPLES

- "Pills are not always the best option for some types of pain. Some people do better with a patch that works for a full week to deliver a steady stream of medication. I'm wondering if you have thought about that type of treatment since the pills seem to be less effective for you?"
- "It can be frustrating that some painful conditions do not have great medication treatment options."
- "If that's not an option for you, perhaps you might be open to discussing other treatment options (like buprenorphine)."
- "What are some ways we could manage your pain while keeping you safe?"

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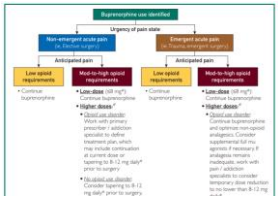
ACUTE PAIN – NO DEA X WAIVER NEED IN THE INPATIENT SETTING.



Warner et al Mayo Clinic Proc 2020

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OTHER CONSIDERATIONS

- ❑If acute pain episode occurs with inpatient admission, **continue the buprenorphine (no X waiver needed!)**→consider IV opioids vs. Ketamine or IV Buprenex (can be use peri-operatively).
- ❑CAUTION: Marijuana→current data shows worsening long-term outcomes especially with mood symptoms.
- ❑And if use disorder manifests, then treat the person suffering with the disease; avoid the stigma of treating addiction as if it is a personality flaw or a moral failing.

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"THE OPPOSITE OF ADDICTION IS NOT SOBRIETY…"

…it's Human Connection.

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INTEGRATIVE TREATMENT OPTIONS

David Gaffney, LMSW BCDCH

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The Shift

The 2nd revolution:

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Crucial Learning #1

- When a person is injured, there are 2 complete different injuries:
- The wound (at the site)
- The Pain (created in the brain; felt in the body)

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Sample Pain Pathway

- Site Pain (Nociceptive)
- Electrical Impulse (non-interpreted) and inflammation
- Spine (Pain-Gate)
- Midbrain (Opiates & Respiration)
- Thalamus
- PreFrontal Lobe (Interpretation), Parietal (Association) and Temporal (Meaning)

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Table 1: Brain areas activated in hypnotic pain relief

Brain area	Function
Thalamus	Relays and synchronizes sensory input into a unified image
Somatosensory cortex (S1, S2)	Registers sensory input
Insula	Translates sensory input into emotions, desires, perception, self-awareness
Anterior cingulate cortex (ACC)	Converts physical/emotional awareness into intentions and actions
Prefrontal cortex (PFC)	Orchestrates thoughts and actions in accordance with internal goals and beliefs
Occipital cortex (OC)	Processes imagery
Basal ganglia (BG)	Regulates voluntary motor control and procedural learning of routine behaviors

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Crucial Learning #2

- There is no such thing as pain: there are pains
- Each person's pain is different, depending on which path in the brain it takes, and what is triggered along that path.

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Crucial Learning #3

- There is no solution to pain: there are multiple solutions—depending on where in the brain the pain is triggering activity
- Each person's pain solution will thus be different—and need to be tailored to their brain's expression of pain

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Improving the brain impacts pain…

When exposed to heated probe

Method:	% decrease in pain:
• Opioids	• 25-30%
• CBT	• 30%
• Mindfulness medit.	• 40%
• Visualizing a loved one	• 44%
• Massage	• 50%
• Hypnosis	• 75%

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Crucial Learning #4a and 4b

- When a person is in pain, there are at least 2 types of pain:
- Sensory ("pain")
- Affective ("suffering")
- And, there are cognitive modulators:
  - Meaning
  - Value
  - Pain Response Style

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Crucial Learning #5a & 5b

- Stress is a primary activator of pain signals
- Vagal activation is a primary de-activator of pain signals

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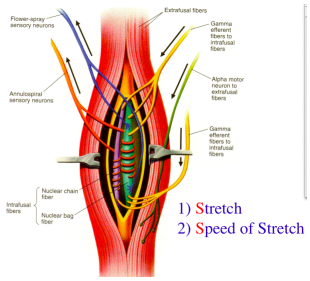
Muscle Spindle



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Video: Helping the Brain Make a difference

- Watch:
  Meditation and Pain
  - If we change the meaning, we change the pain

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Intro to the Tier System
(guidelines for all therapies)

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Recent Meta-Analysis Reviews:

- Most Direct Pain Intervention evidence indicates these three as best standardized psychological therapies:
  - CBT-CP
  - ACT for Pain
  - MBSR (Mindfulness Based Stress Reduction)

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2017 VA CIH Directive List 1:

List of CIH Approaches Approved by USH	Date
Acupuncture	6/7/17
Meditation	6/7/17
Yoga	6/7/17
Tai Chi	6/7/17
Biofeedback	8/3/17
Hypnosis	8/3/17
Guided Imagery	8/3/17
Massage	8/3/17

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2017 CIH Directive List 2:

List of "Generally Considered Safe" Approaches	Date
Healing Touch	6/27/17
Acupressure	6/27/17
Alexander Technique	6/27/17
Reflexology	6/27/17
Reiki	6/27/17
Therapeutic Touch	6/27/17
Emotional Freedom Technique (EFT)	6/27/17
Animal Assisted Therapy	6/27/17
Aromatherapy*	7/25/17

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Into the Breach…

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The Boring Basics: the non-pain treatment plan for pain

1. **Address Anxiety/Stress**
2. **Improve Vagal Tone**
   1. **Relaxation**
   2. **coping skills**
   3. **improve social connections**
3. **Treat Trauma**
4. **Increase QOL in other areas (SALT, bigger bucket)**

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2nd Generation Treatment Plan

1. Behavioral Activation
   (somatic activation)--Arthur
2. Pacing
   Decrease activity then increase
3. Return to pleasure

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The Boring Basics

1. **Breath Training** is the most important core skill in pain (diaphramatic, non-hyperventilating)
2. **Relaxation** is a skill, not a trait. Skills must be taught, and practiced.
3. There is no pain control if there is no **Deep Sleep**
4. **Movement**: a retraining of type, amount, and method
5. **Mindfulness** (in movement and awareness)—they need to re-inhabit their body before it will heal.
6. **Though control:** thoughts link directly to neuroplasticity and pain receptors
7. Talk in the body's language: Use **Imagery**

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Mind-Body Interventions

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Meditation (NOT Mindfulness)

Research supports the following benefits:

1. Reverses memory loss
2. Increases energy levels
3. Improves sleep quality
4. Up regulates positive genes
5. Down regulates inflammatory genes
6. Reduces stress in patient and caregiver
7. Improves psychological and spiritual well being
8. Activates significant anatomical areas of the brain
9. Increases telomerase, the rejuvenating enzyme that slows cell aging, by 43%, the largest increase ever recorded

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Relaxation/Biofeedback/Breath Training

Research supports the following benefits:

1. Improved heart rate variability
2. Improved bowel and stomach functioning
3. Decreased cortisol production
4. Decreased muscle tension and increased muscle elasticity
5. Decreased pain, head pain, site specific pain
6. Improved mood and mood regulation
7. Improved immune system functioning

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EFT/EMDR

Research supports the following benefits:

1. 25% Cortisol drop in session
2. Sustained drops outside of session
3. Increased production of natural endorphins and opioid substances
4. Decreased muscle tension and increased muscle elasticity
5. Ability to impact/remove Phantom Limb Pain
6. Simultaneous improvements in depression/anxiety/and-or PTSD

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Hypnosis

Research supports the following benefits:

1. Improved cortical functioning
2. Improved pain tolerance
3. Decreased activation of pain receptors
4. Improved motility and mobility in heart, stomach, and intestinal functions
5. Improved blood flow in brain
6. Increased theta/alpha balance
7. Improved sleep
8. Less anesthetic needed during surgery
9. Lower medication doses after surgery
10. Shorter hospital stays

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Yoga / Tai Chi (and less so others)

Research supports the following benefits:

1. Improved sleep
2. Decreased back, hip, shoulder and back pain
3. Improved blood flow
4. Decreased falls
5. Increased cognitive functions, improved memory, improved judgement
6. Decreased depression, anxiety, and PTSD
7. Decreased stress hormones

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