

The Opioid Crisis: Addiction and Anesthesia

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Conflicts

- None

Addiction

- Chronic disease of reward, motivation and memory
- Biological, psychological, social and spiritual manifestations
- Characterized by:
 - Inability to abstain from use
 - Loss of control of use of the substance
 - Compulsion and craving for the substance
 - Persistent use of the substance despite possible harmful consequences
- Cycles of relapse and remission

Pseudoaddiction?

- The idea that drug-seeking behaviors typically associated with addiction may reflect undertreated pain rather than addiction
 - Defined based upon the patient's motivation in seeking opioid: pain relief (pseudo-) vs euphoria (addiction)
 - No evidence to support this phenomenon
 - Pain and addiction co-exist!
 - Pain is one of the most common symptoms of opioid withdrawal
 - Chronic pain is associated with more opioid craving among patients on opioid maintenance for OUD
- However, **tolerance** is a well-described and researched phenomenon and must be treated adequately

Evaluation of Patient for OUD

CAGE-AID (Adapted to Include Drugs):

1. In the last three months, have you felt you should cut down or stop drinking or using drugs?
2. In the last three months, has anyone annoyed you or gotten on your nerves by telling you to cut down or stop drinking or using drugs?
3. In the last three months, have you felt guilty or bad about how much you drink or use drugs?
4. In the last three months, have you been waking up wanting to have an alcoholic drink or use drugs?

DSM-5 Diagnosis of Opioid Use Disorder (OUD)

2 or more of the following within 12 months:

- Using larger amounts of opioids or over longer time than intended
- Persistent desire to cut down or failure to control use
- Inordinate time spent obtaining, using, or recovering from use
- Craving, or a strong desire or urge to use substance
- Failure to fulfill major role obligations at work, school, or home due to recurrent opioid use
- Continued use despite recurrent or persistent social or interpersonal problems caused or exacerbated by opioid use
- Giving up or reducing social, occupational, or recreational activities due to opioid use
- Recurrent opioid use in physically hazardous situations
- Continued opioid use despite physical or psychological problems caused or exacerbated by its use
 - ***Tolerance (marked increase in amount; marked decrease in effect)**
 - ***Withdrawal syndrome with cessation of opioids or use of opioids (or related substance) to relieve or avoid w/d symptoms.**

Evaluation of Patient with OUD

- Obtain a comprehensive history
 - Establish trust and effective communication to obtain an honest history; remain non-judgmental
 - Dosage
 - Frequency
 - Time of last dose
 - Illicit drug use
 - When possible, verify dosing regimen with opioid maintenance provider
 - Consider urine drug screen (UDS)
 - If negative, patient may be diverting medication
 - False positives possible, time consuming to verify
 - Will not give any information about past misuse

Sen S, Arulkumar S, Cornett EM, Gayle JA, Flower RR, Fox CJ, et al. New Pain Management Options for the Surgical Patient on Methadone and Buprenorphine. Curr Pain Headache Rep. 2016;20(3):16.

Factors for Opioid Addiction or Abuse

- Risk Factors among adults on ≥ 90 days of COT
 - Not being married (population of veterans)
 - Younger age
 - Current Mental Health Disorder
 - Current painful physical disorder
 - High level of pain if receiving >4 rx's
 - Chronic pain dx in patients on methadone therapy
 - Back pain
 - Headache
 - High levels of health care visits or "poor health"
 - History of opioid abuse
 - Current non-opioid use disorder
 - Having an rx for >211-day supply in 12 months
 - High doses of opioid (esp >120mg MED)
 - Treatment with short-acting opioid
 - Having an rx for sedatives or hypnotics
- Additional Risk Factors
 - Genetics
 - Certain mutations in genes for the μ-, κ-, or δ-opioid receptors
- Protective Factors
 - Positive well-being
 - Being employed
 - Having health insurance
 - Among adults on ≥ 90 days of COT:
 - Long-acting opioid only
 - Lower prescribed dosage
 - Smaller prescribed supply

Identifying Who Is at Risk

- Screening
 - Self report Questionnaires
 - Assess risk of abuse with **chronic** opioid therapy
- Urine Drug Screening
- Check the state Prescription Drug Monitoring Program

SOAPP-1.0 SF (Short Form)

- Scale 0 = Never, 1 = Seldom, 2 = Sometimes, 3 = Often, 4 = Very Often
 1. How often do you have mood swings?
 2. How often do you smoke a cigarette within an hour after you wake up
 3. How often have you taken medication other than the way that it was prescribed?
 4. How often have you used illegal drugs (for example, marijuana, cocaine, etc.) in the past five years?
 5. How often, in your lifetime, have you had legal problems or been arrested?
- Score ≥4 is Positive (86% sensitivity, 67% specificity; 69% PPV and 85% NPV)

Opioid Risk Tool

- Score of ≤3 = low risk for future opioid abuse
- Score of 4 to 7 = moderate risk for opioid abuse
- Score of ≥8 = 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		
History of preadolescent sexual abuse	1	1
	3	0
Psychological disease		
ADD, OCD, bipolar, schizophrenia	2	2
Depression	1	1
Scoring totals		

Importance of Perioperative Pain Management

- More than 80% of surgical patients experience postoperative pain, and 86% of these patients rated the pain as moderate, severe or extreme
 - Untreated pain risks persistent post-operative pain
 - Supported by both retrospective (recall bias) and prospective studies
 - Patients who attribute pain to trauma or surgery experience more emotional distress and higher pain than those whose pain was not associated with acute event

CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016

- **Regarding Acute Pain:**
 - “Long-term opioid use often begins with treatment of acute pain. When opioids are used for acute pain, clinicians should prescribe the lowest effective dose of immediate-release opioids and should prescribe no greater quantity than needed for the expected duration of pain severe enough to require opioids. Three days or less will often be sufficient; more than seven days will rarely be needed (recommendation category: A, evidence type: 4).”

CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016

- **Regarding Acute Pain:**
 - “a greater amount of early opioid exposure is associated with greater risk for long-term use (KQ5).”
 - “limiting days of opioids prescribed also should minimize the need to taper”
 - “each day of unnecessary opioid use increases likelihood of physical dependence without adding benefit”
 - “when opioids are needed for acute pain, clinicians should prescribe opioids at the lowest effective dose and for no longer than the expected duration of pain severe enough to require opioids”
 - “in most cases of acute pain **not related to surgery or trauma**, a ≤3 days’ supply of opioids will be sufficient.”
 - “Acute pain can often be managed without opioids.”
 - “Given longer half-lives and longer duration of effects (e.g., respiratory depression) with ER/LA opioids, clinicians should not prescribe ER/LA opioids for the treatment of acute pain.”

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Opioid Crisis: Role of Prescription Opioids

- In 2013, 1.9 million people abused or dependent upon prescription opioid (DSM-IV dx criteria)
- Having a history of opioid analgesic rx increases risk for overdose and OUD
 - 1/550 patients died from opioid-related overdose at median of 2.6 yrs from first opioid rx
 - 1/32 patients on >200 MME died from opioid overdose

Reducing Long-Term Use

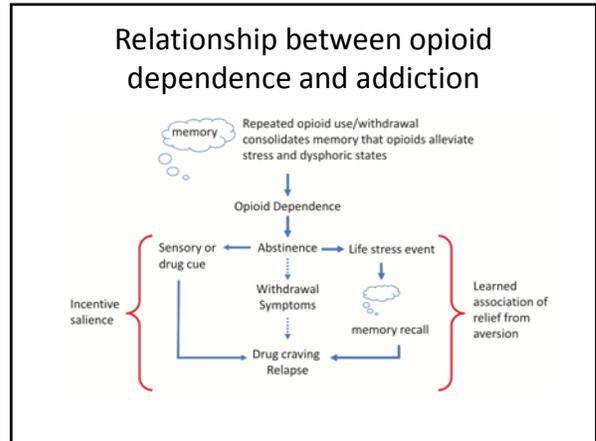
- Use of opioid for acute pain associated with long-term use
- Higher initial exposure (dose, duration/days supplied) also associated with long-term use
- Not all acute pain requires treatment with opioids!
- Why do we care what our patients do for pain long-term?

Risk Factors for OUD

- The use of prescription opioids for chronic non-cancer pain was a **strong risk factor** for OUD
 - BUT duration of therapy was a greater determinant of OUD development than daily dose
 - <0.2% on low-dose/acute opioids vs 6% on high dose/chronic
 - >120mg MED/>90 days

Do Chronic Pain and Opioid Use Disorder Coexist?

- Estimates of OUD prevalence among patients on COT for chronic pain vary
 - Several studies have quoted <1-5%
 - A large meta-analysis concluded that addiction was present in 8-12% of patients on COT for chronic pain
 - Still others have estimated the prevalence of OUD at 20-35%
- Far more people use these drugs for intended medical purposes than misuse/abuse them!



Opioids Change the Brain!

- One month of morphine for chronic pain led to morphologic changes on MRI that were not seen with placebo treatment
 - amygdala, medial orbital gyrus, hypothalamus, mid-cingulate, inferior frontal gyrus, ventral posterior cingulate, caudal pons, and dorsal posterior cingulate
- These changes persisted several months after morphine was tapered

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Non-Pharmacologic Interventions for Pain

- Expectations
 - What is patient's pre-operative pain baseline?
 - What is patient's target number?
 - 0/10 is not a reasonable goal!
 - Focus on function (ambulation, PT, sleep) rather than #
- Interventions
 - Most low cost, few if any adverse effects
 - Aromatherapy
 - Lavender for post-operative pain
 - Music therapy
 - Procedural pain, post-operative pain, obstetric
 - Relaxation breathing
 - Acupressure
 - Joint Commission Standards Effective January 1, 2018
 - The hospital provides nonpharmacologic pain treatment modalities.

Non-Pharmacologic Interventions for Pain

- TENS
 - 80-150 Hz
 - Meta-analysis found TENS reduced opioid consumption vs placebo at 12, 24 and 48-hours after TKA
 - Associated with lower VAS at all 3 time points
 - Minimal side effects
- Acupuncture
 - May increase time until first opioid dose after TKA and reduce pain
 - No impact on post-operative opioid dose
 - May reduce pain in first 2 days after TKA and THA

Non-Pharmacologic Interventions for Pain

- Structured attentive behavior ± self hypnosis
 - Attentive, encouraging, provision of sense of control, neutral descriptors/avoidance of negative suggestions ± script for breathing, self-guided imagery
 - Stable rating of pain throughout procedure in hypnosis group vs linear increase w/ time in others
 - Shorter procedure time for hypnosis than standard
 - Less PCA (0.5mg midaz/25µg fentanyl per demand) use in attention and hypnosis groups: 1.9 units vs 0.8 and 0.9 units, respectively

Figure 3: Average pain score as a function of procedure-time interval for each group

The Impact of Intra-Operative Opioids

- In animal model of spinal nerve injury, exposure to morphine after trauma leads to sensitization, allodynia
 - Lower threshold for mechanical stimulation of paws
 - May be via immune activation of glial cells

A. Ipsilateral hindpaw von Frey

Hyperalgesia

- Natural phenomenon after injury that serves to facilitate healing
- Central sensitization may lead to pathological persistent pain hyperalgesia
 - Increased CNS hyperexcitability to stimuli

Hyperalgesia

- In human studies, techniques that are opioid-sparing (multimodal) associated with less post-operative pain and opioid use
 - Avoidance of intra-operative opioid with use of beta-blocker infusion results in lower post-op pain scores and opioid use
 - In some studies, even results in less chronic neuropathic pain

Do Non-Opioid Adjuncts Impact Long-Term Pain or Opioid Outcomes?

- Gabapentinoids
 - Single pre-operative pregabalin dose or continued administration peri-operatively can reduce post-operative pain scores
 - Randomized, placebo-controlled trial of 240 patients given pregabalin pre-op and for 14 days after surgery
 - Lower post-operative opioid consumption than placebo
 - Earlier achievement of hospital discharge criteria (~9 hrs)
 - Greater active ROM (functional)
 - Lower incidence of neuropathic pain at 3 and 6 months post-op
 - 0% vs 8.7 and 5.2%

Do Non-Opioid Adjuncts Impact Long-Term Pain or Opioid Outcomes?

- Gabapentinoids
 - Gabapentin has similarly been shown to reduce pain at 6 months after orthopedic, ENT, breast and abdominal/pelvic surgery
 - In a recent RCT, gabapentin did not accelerate cessation of post-operative pain, but increased **probability of opioid cessation** after surgery (by 24%) and **reduced duration of opioid therapy** (mean 25 days vs 32 days for placebo)

Do Non-Opioid Adjuncts Impact Long-Term Pain or Opioid Outcomes?

- Local Anesthetic Techniques

Lack of Association Between the Use of Nerve Blockade and the Risk of Postoperative Chronic Opioid Use Among Patients Undergoing Shoulder Arthroplasty: Evidence From the MarketScan Database

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- Unfortunately, 2 recent database reviews suggests that use of regional anesthetic techniques for TKA and Shoulder Arthroplasty is not associated with lower risk of chronic post-surgical opioid use

Management of Patient with OUD

- No RCTs of acute pain management in patients on maintenance therapy for OUD
 - No evidence that exposure to opioids for acute pain increases relapse risk
 - Suggested that the stress of uncontrolled pain may trigger relapse

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Management of Patient with OUD

- Has not been studied in opioid-tolerant patients
 - Still WIDELY recommended to use a multi-modal approach in such patients where opioids may be ineffective (tolerance, OIH, etc.)
 - regional anesthesia
 - NSAIDs or COX-2 Inhibitors
 - acetaminophen
 - NMDA antagonists
 - α_2 agonists
 - anti-convulsants

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