



VISUALIZING PAIN AND ADDICTION: AN AUGMENTED REALITY DISCUSSION

*Supported by an educational grant from
Johnson & Johnson*

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Disclosures



- ***Research Support:*** Grünenthal
- ***Consultant:*** Pfizer Inc.; SCILEX Pharmaceuticals, Inc.



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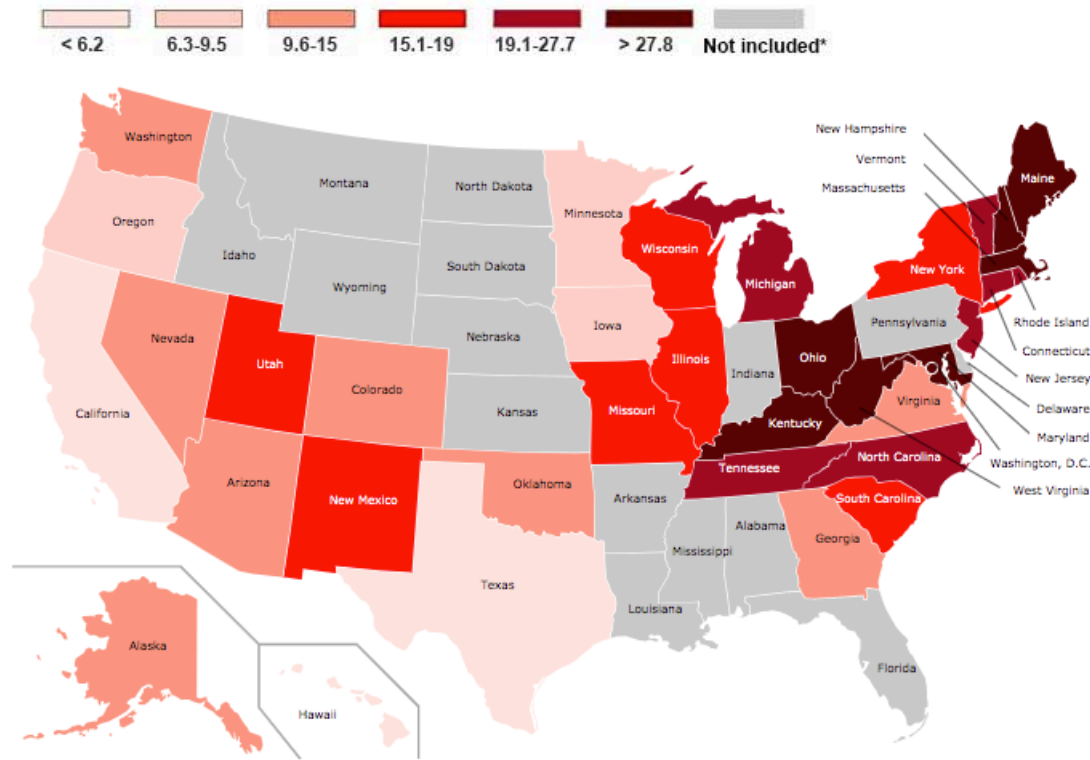
- Dr. Gebke has no disclosures to report.

LEARNING OBJECTIVES



- Recognize the growing burden of the opioid epidemic and the role of all stakeholders in addressing the opioid epidemic in their community.
- Apply knowledge of acute and chronic pain pathways and underlying mechanisms to clinical assessment and appropriate management
- Upon evaluation of current clinical workflow for opioid prescribing, incorporate two best practice strategies to optimize safe and competent prescribing and minimize potential for abuse and diversion

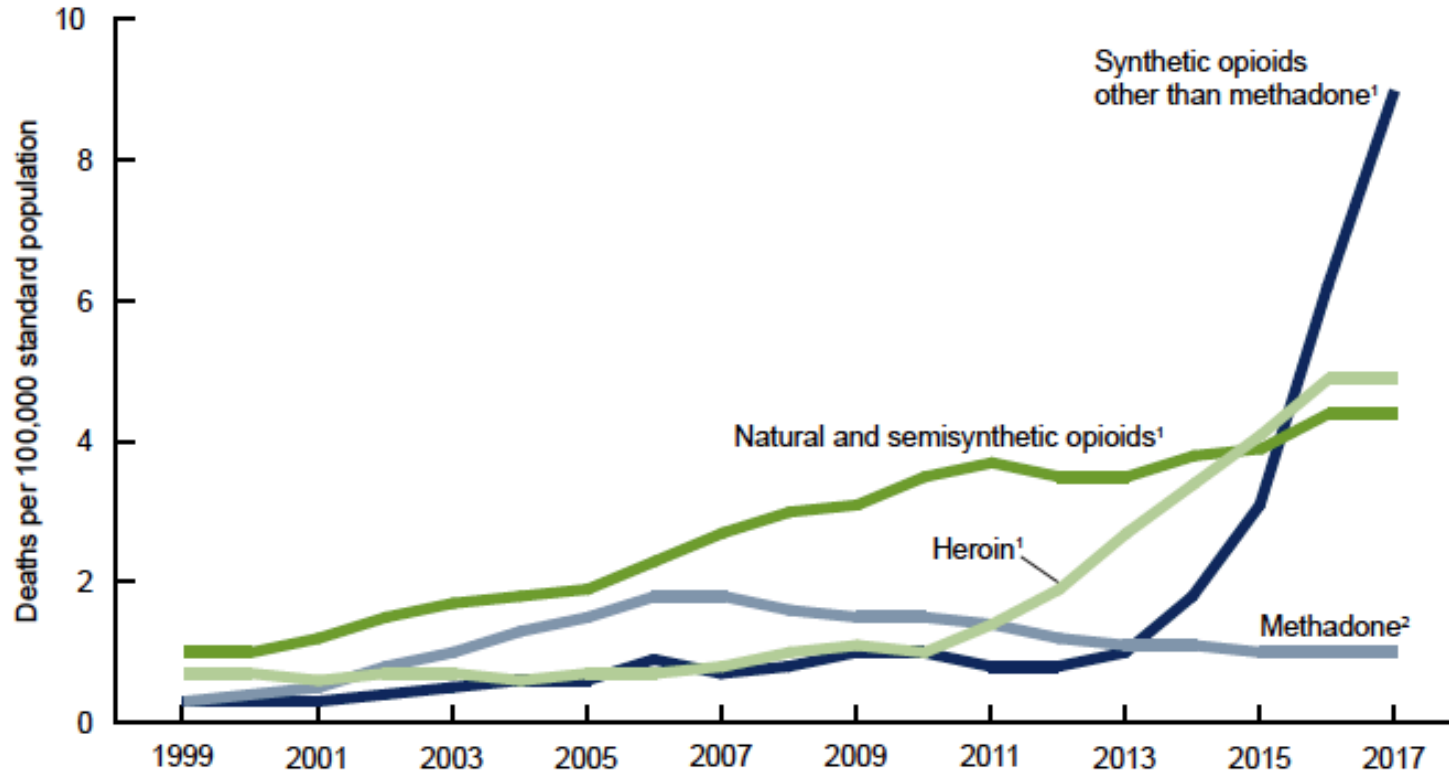
2017 OPIOID-INVOLVED OVERDOSE DEATH RATES 100,000 PEOPLE



Highest
Kentucky
Maryland
Maine
New Hampshire
Ohio
Rhode Island
West Virginia

National Institute on Drug Abuse. The original source of the opioid prescribing rates is *IQVIA Xponent 2006–2017*. Available at <https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state>. Accessed May 28, 2019.

DEATHS BY OPIOID CATEGORY



DRUG ABUSE AND INFECTIOUS DISEASE CONSEQUENCES



People who inject drugs are a high-risk subgroup of endocarditis patients²



Viral hepatitis is increasing at concerning rates: new hepatitis B infections **rose 20%** from 2014-2015, and new hepatitis C infections **increased 233%** from 2010-2016



1 of every 10 new HIV infections is among people who inject drugs



The rate of **infants born to hepatitis C-infected mothers increased by 68%** nationally from 2011-2014, primarily due to the nation's opioid crisis

People who inject drugs are at elevated risk for unsafe sexual practices, such as having sex without a condom, having sex partners who are injection drug users, or engaging in sex work. Such high-risk behavior puts injectable drug users at elevated risk for acquiring and transmitting an STD.

\$100 MILLION IN MEDICAL COSTS



The result of a 2015 outbreak of disease linked to opioid use in Indiana



225 people were diagnosed with HIV
>90% were co-infected with hepatitis C

NHIS ESTIMATES OF CHRONIC PAIN AND HIGH IMPACT CHRONIC PAIN^{1,2}

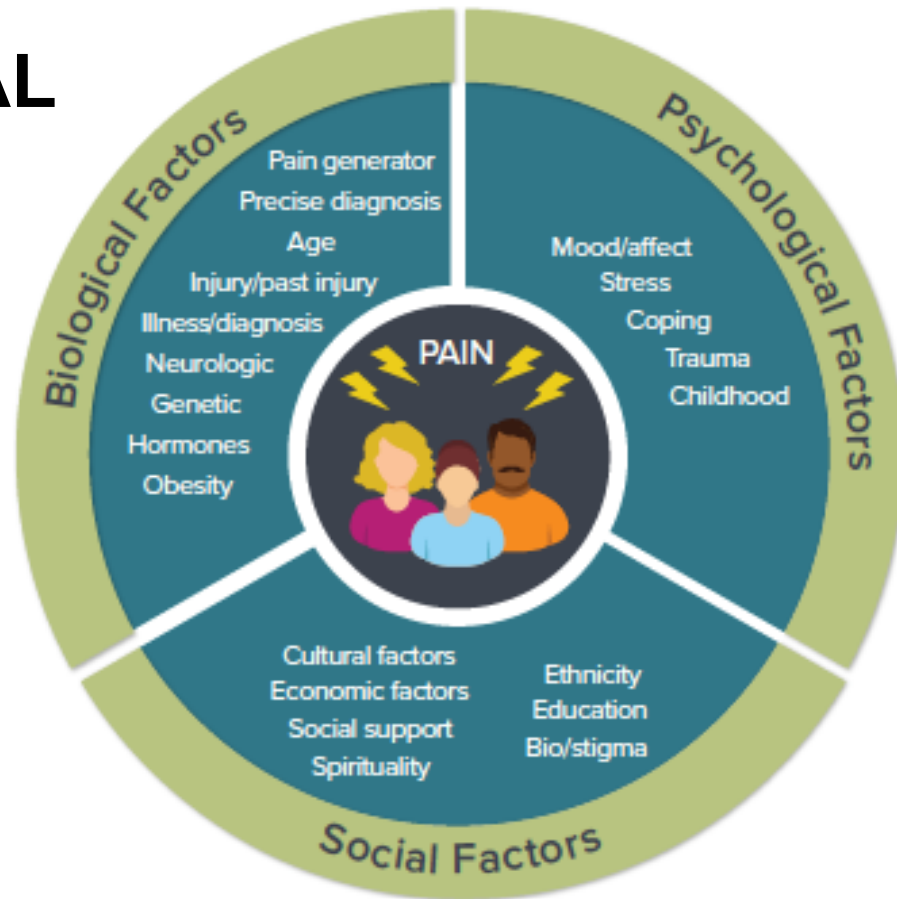


- Chronic pain: 50 million people²
 - Pain most days or every day in past 6 months
- High impact chronic pain: 20 million people
 - Chronic pain limited life or work activities on most days or every day during past 6 months

NHIS = National Health Interview Survey

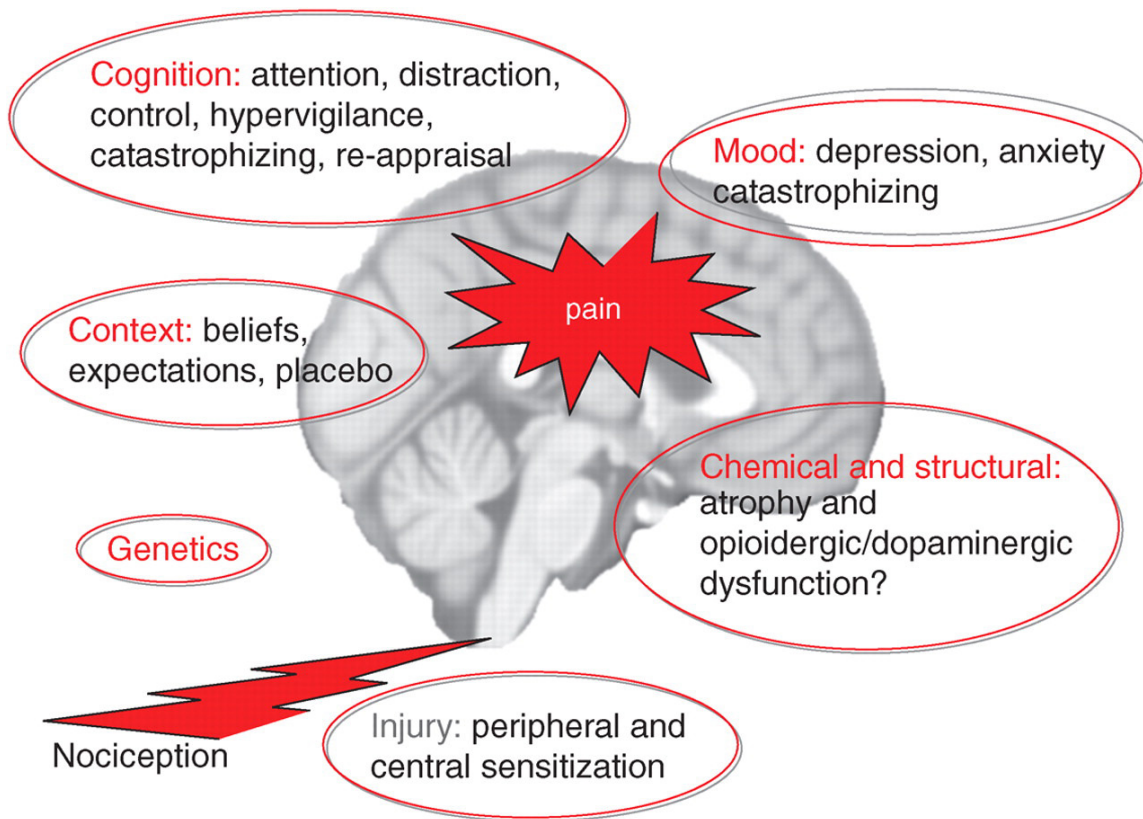
1. Nahin RL. *Journal of Pain*. 2015;16(8):769-780.; 2. Dahlhamer J, et al. *MMWR* 2018;67:1001-1006.;

BIOPSYCHOSOCIAL MODEL OF PAIN MANAGEMENT



U.S. Department of Health and Human Services. Pain Management Best Practices Inter-Agency Task Force Report: Updates, Gaps, Inconsistencies, and Recommendations. Published May 9, 2019. Available at <https://www.hhs.gov/sites/default/files/pmtf-final-report-2019-05-23.pdf>.

FACTORS THAT INFLUENCE NOCICEPTIVE INPUTS AFFECTING PAIN PERCEPTION





PAIN PATHWAYS

Augmented Reality

CHRONIC PAIN PRESENTATIONS

Predominantly Neuropathic

- Postherpetic neuralgia
- Painful diabetic peripheral neuropathy
- Lumbar or cervical radiculopathy
- Stenosis
- Tumor-related neuropathy
- Chemotherapy-induced neuropathy
- Small fiber neuropathy
- Persistent postoperative pain
- Multiple sclerosis pain
- Post-stroke pain
- Pain associated with spinal cord injury

CHRONIC PAIN PRESENTATIONS

Predominantly Nociceptive

- Osteoarthritis
- Rheumatoid arthritis
- Tendonitis, bursitis
- Ankylosing spondylitis
- Gout
- Neck and back pain with structural pathology
- Tumor-related nociceptive pain
- Sickle-cell disease
- Inflammatory bowel disease

CHRONIC PAIN PRESENTATIONS

Predominantly Nociceptive

- Fibromyalgia
- Irritable bowel syndrome
- Tension-type pain
- Interstitial cystitis/pelvic pain syndrome
- Tempo-mandibular joint disorder
- Chronic fatigue syndrome
- Restless leg syndrome
- Neck and back pain without structural pathology

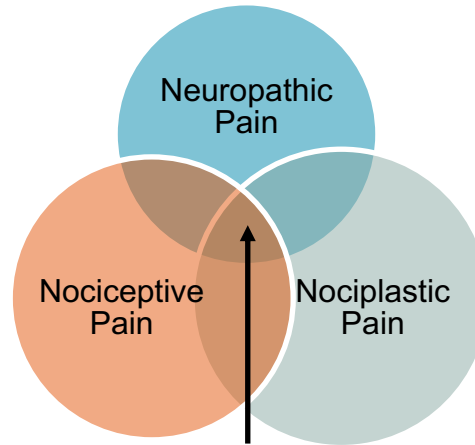
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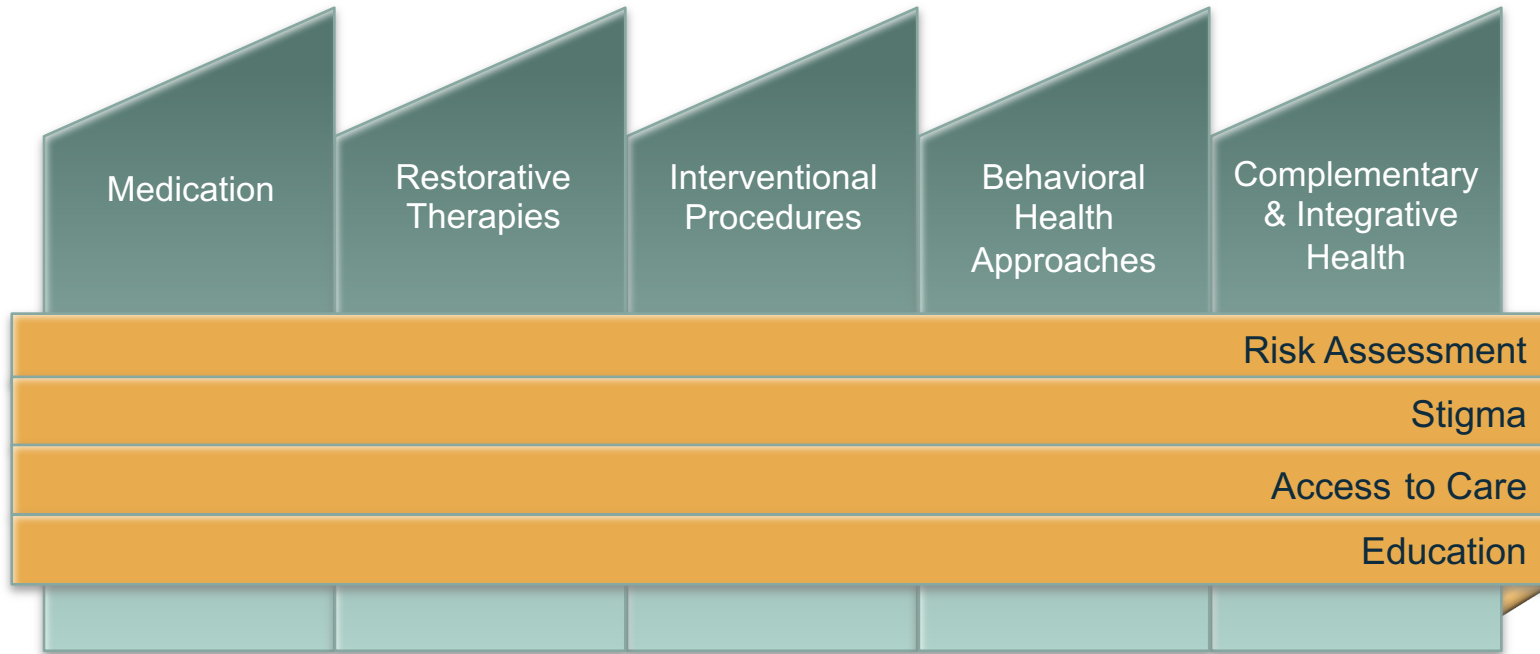
Mixed pain conditions are frequently associated with multiple pain pathophysiologies once pain becomes chronic

Predominantly Nociplastic

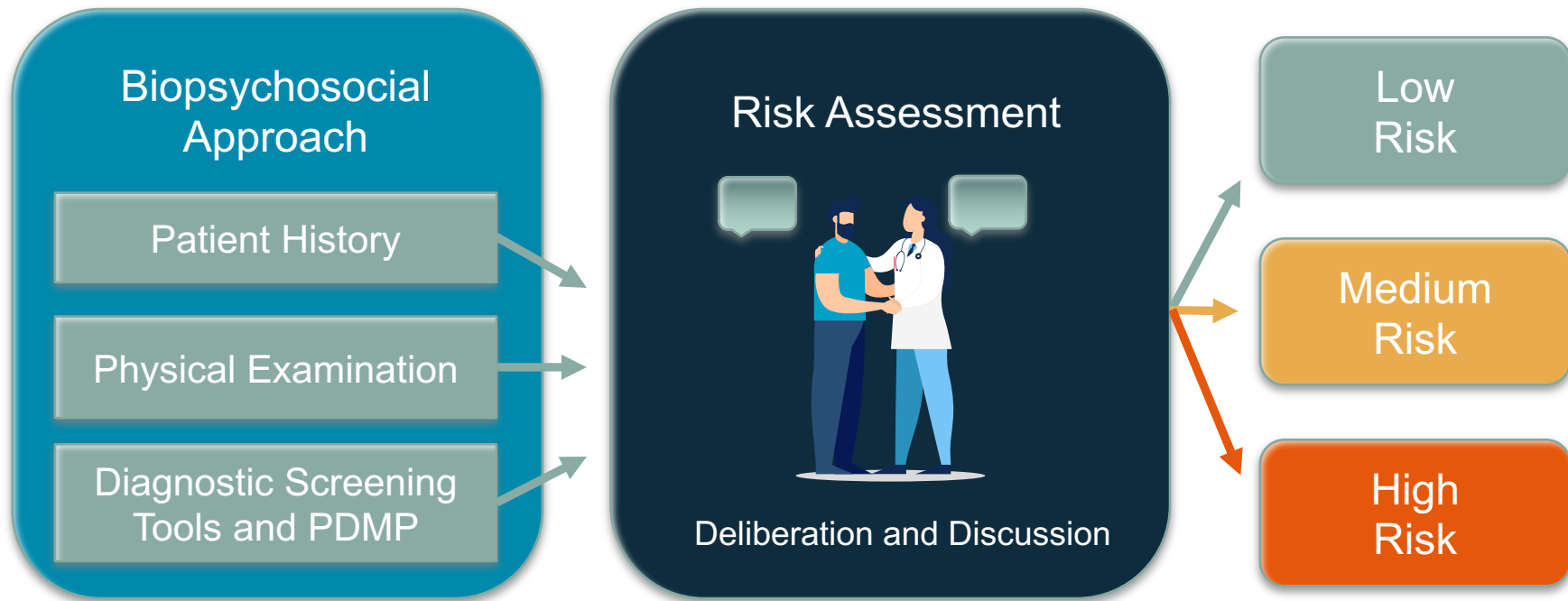
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ACUTE AND CHRONIC PAIN MANAGEMENT:

Individualized, Multimodal, Multidisciplinary



A RISK ASSESSMENT IS CRITICAL TO PROVIDING THE BEST POSSIBLE PATIENT-CENTERED OUTCOME WHILE MITIGATING UNNECESSARY OPIOID EXPOSURE



UNITED STATES PREVENTIVE SERVICES TASK FORCE (USPSTF)



- Recommendation that all adults be screened for illicit drug use, including nonmedical use of prescription drugs
- Pharmacists are well-positioned to take a lead role in screening patients

SBIRT: SCREENING, BRIEF INTERVENTION, REFERRAL TO TREATMENT



- **Screening:** Assess a patient for risky substance use behaviors using standardized screening tools
- **Brief Intervention:** Engage a patient showing risky substance use behaviors in a short conversation, providing feedback and advice
- **Referral to Treatment:** A healthcare professional provides a referral to brief therapy or additional treatment to patients who screen in need of additional services

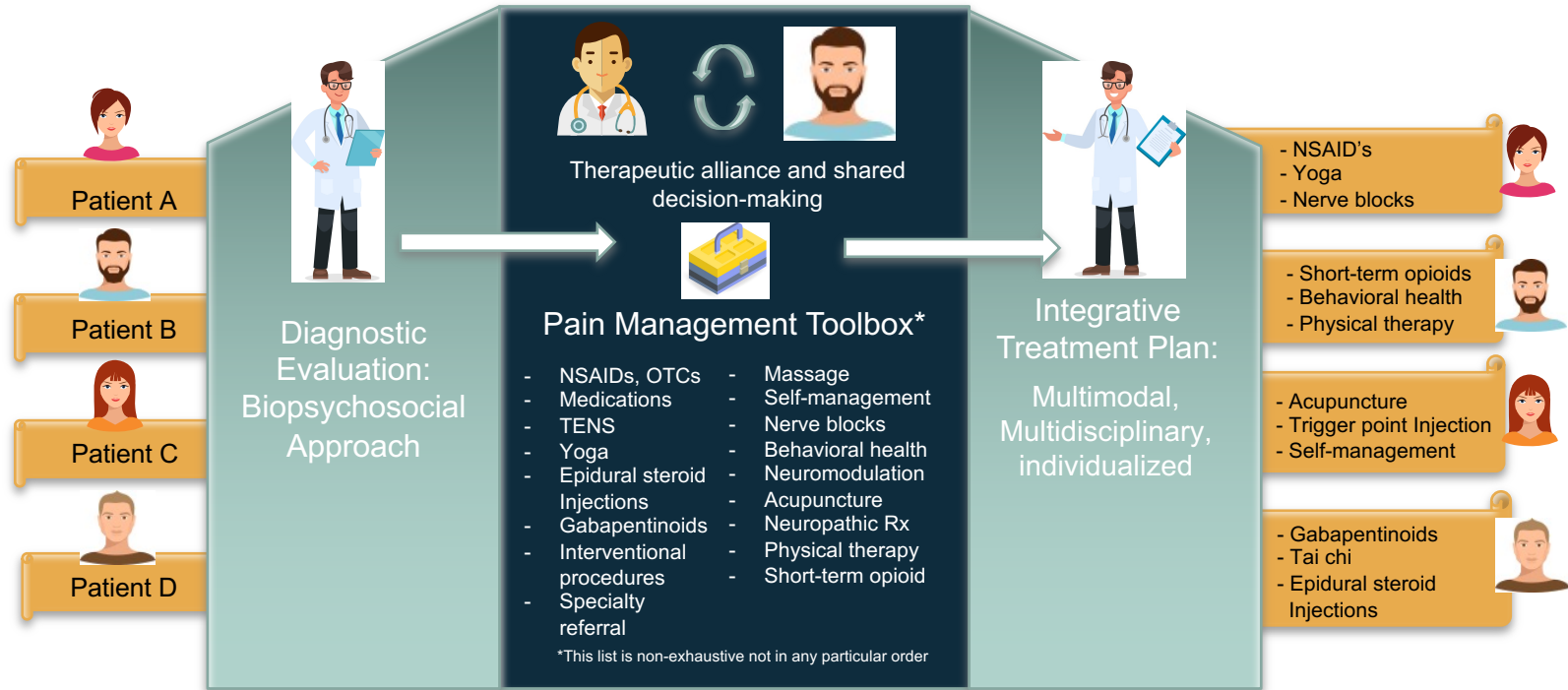
ASSESSMENT TOOLS

- Psychosocial assessment
 - Use of tools such as GAD-7, PHQ-9 to assess anxiety and depression
 - Pain catastrophizing tools
 - PEG: Pain, Enjoyment of life and General activity
 - Opioid Risk Tool

Opioid Risk Tool		
MARK EACH BOX THAT APPLIES:	FEMALE	MALE
1. Family history of substance abuse		
Alcohol	<input type="checkbox"/> 1	<input type="checkbox"/> 3
Illegal drugs	<input type="checkbox"/> 2	<input type="checkbox"/> 3
Prescription drugs	<input type="checkbox"/> 4	<input type="checkbox"/> 4
2. Personal history of substance abuse		
Alcohol	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Illegal drugs	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Prescription drugs	<input type="checkbox"/> 5	<input type="checkbox"/> 5
3. Age (mark box if between 16 and 45 years)		
	<input type="checkbox"/> 1	<input type="checkbox"/> 1
4. History of preadolescent sexual abuse		
	<input type="checkbox"/> 3	<input type="checkbox"/> 0
5. Psychological disease		
ADD, OCD, bipolar disorder, schizophrenia	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Depression	<input type="checkbox"/> 1	<input type="checkbox"/> 1
SCORING TOTALS: <input type="text"/> <input type="text"/>		
ADMINISTRATION	SCORING	
• On initial visit	• 0-3: low risk (6%)	
• Prior to opioid therapy	• 4-7: moderate risk (28%)	
	• ≥8: high risk (>90%)	

INDIVIDUALIZED PATIENT CARE

Consists of Diagnostic Evaluation That Results in an integrative Treatment Plan That includes All Necessary Treatment Options



CDC GUIDELINE FOR PRESCRIBING OPIOIDS FOR CHRONIC PAIN



Determining need for opioids

- Opioids are not first-line or routine therapy for chronic pain.
- Establish and measure goals for pain and function.
- Discuss benefits and risks of opioid therapy and availability of nonopioid therapies.

Opioid selection, dosage, and duration of therapy

- Use immediate-release opioids when starting.
- Use caution at any dose. Reassess benefits and risk when dose reaches >50 mg MED and avoid increasing dose to > 90 mg MED without carefully justifying decision.
- Long-term use begins with treatment of acute pain. 3 days or less often sufficient.
- Follow-up and re-evaluate risk of harm; reduce dose or taper and discontinue if needed.

Assessing risk and addressing harm

- Evaluate risk factors for opioid-related harms.
- Check PDMP for high dosages and prescriptions from other providers.
- Use urine drug testing to identify prescribed substances and undisclosed use.
- Avoid concurrent benzodiazepine and opioid prescribing.
- Arrange treatment for OUD if needed.

UNINTENDED CONSEQUENCES: NO SHORTCUTS TO OPIOID PRESCRIBING



- Although not intended to be model legislation, 28 states have enacted legislation related to opioid prescription limits
- Has been used to override medical decisions
- Patients on high dose opioids discontinued or dismissed from care
- Universally stop prescribing opioids even when benefits outweigh risks

EDUCATION IS CRITICAL TO THE DELIVERY OF EFFECTIVE PATIENT-CENTERED PAIN CARE AND REDUCING THE RISK ASSOCIATED WITH PRESCRIPTION OPIOIDS



Public
Education



Patient
Education



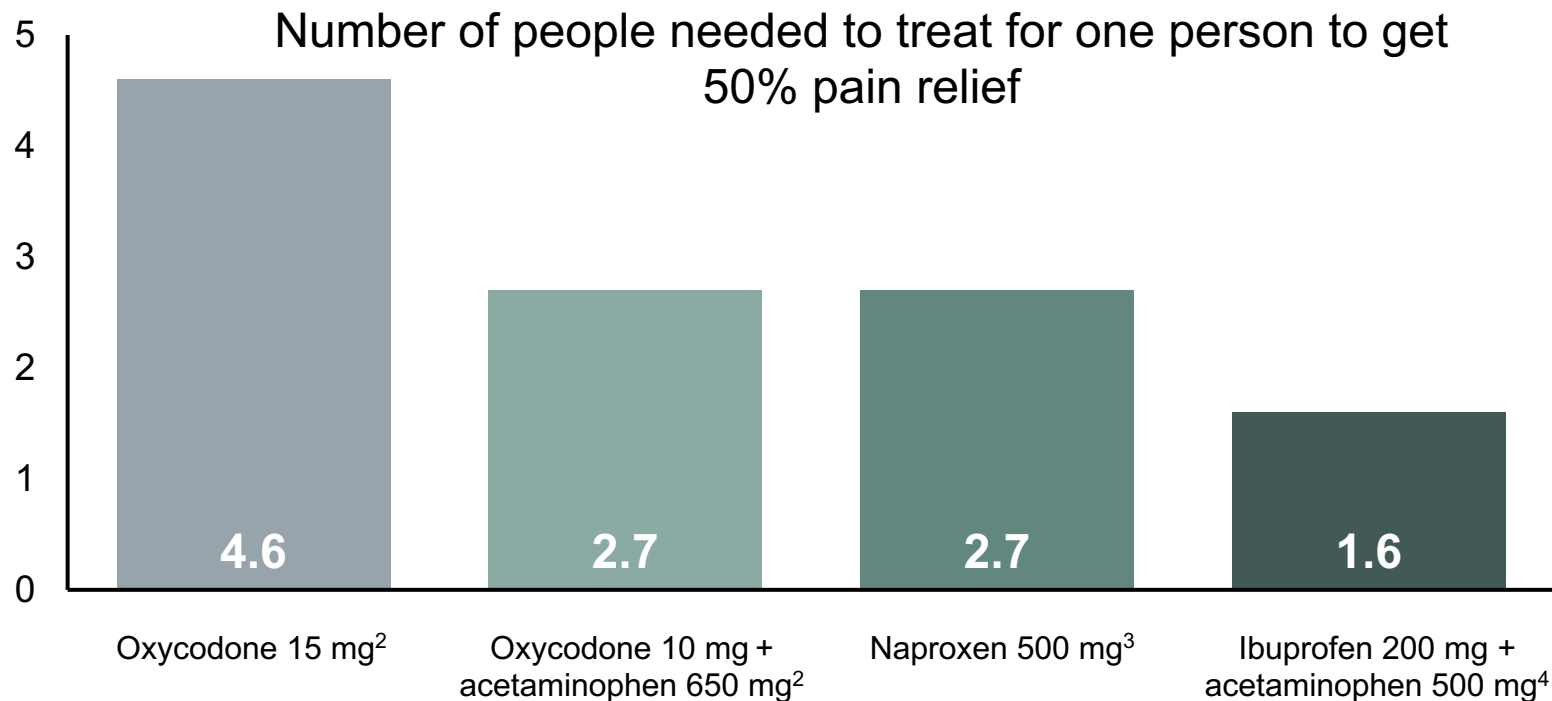
Provider
Education



Policymakers,
Legislators,
Regulators
Education

- + Effective, patient-centered care
- + Optimize patient functional outcomes
- + Appropriate use of pain medication
- + Reduced risk through risk-benefit assessment

OPIOID VS NONOPIOID PAIN RELIEF IN POSTOPERATIVE PAIN



1. Teater DE. Available at <https://www.nsc.org/Portals/0/Documents/RxDrugOverdoseDocuments/Evidence-Efficacy-Pain-Medications.pdf>. Accessed May 24, 2019.; 2. Gaskell H, et al. *Cochrane Database Syst Rev.* 2009;(3):CD002763.; 3. Derry CJ, et al. *Cochrane Database Syst Rev.* 2009;(3):CD001548.; 4. Derry S, et al. *Cochrane Database Syst Rev.* 2013;(6):CD010289.

DO ALL SURGICAL PROCEDURES REQUIRE OPIOIDS?



- 1 in 16 surgical patients prescribed opioids becomes a long-term user¹
- 190 patients undergoing 6 procedures offered the opportunity to participate in opioid-sparing management²
- Advised to use acetaminophen and ibuprofen and given a small “rescue” opioid prescription for breakthrough pain
 - 52% used NO opioids after procedures
 - Patients report high level of satisfaction and pain control
 - 91% of patient agreed their pain was manageable
- Results demonstrate effectiveness and acceptability of reduction and/or elimination of opioids after discharge from minor surgery

RECOMMENDATIONS FOR PAIN MEDICATION FOLLOWING MAJOR MUSCULOSKELETAL INJURY PROCEDURE

	Opioid	Non-Opioid
Inpatient	<ul style="list-style-type: none"> Moderate pain: Oxycodone/APAP 5mg/325mg 1 tab po q4 hrs PRN Severe pain: Oxycodone/APAP 5mg/325 mg 2 tabs po q6 hrs PRN Hydromorphone 1mg IV q3 hrs PRN for severe breakthrough pain 	<ul style="list-style-type: none"> Ketorolac 15mg IV q6 hrs x 5 doses followed by ibuprofen 600mg po q8 hrs Gabapentin 100mg 1 tab po TID Scheduled APAP 500mg po q12 hrs
Week 1 at discharge	<ul style="list-style-type: none"> Oxycodone/APAP 5mg/325 mg 1 tab po q4 hrs PRN. Dispense #42 (1 time Rx, no refills) 	<ul style="list-style-type: none"> Ibuprofen 600mg po q8 hrs x 7 days (Rx given) Gabapentin 100mg 1 tab po TID x 7 days (Rx given) Scheduled APAP 500mg po q12 hrs x 7 days (can increase as combined opioid analgesic decreases)
	<ul style="list-style-type: none"> Hydrocodone/APAP 5mg/325mg or tramadol 50mg (only if necessary, 3 Rx Max) 	<ul style="list-style-type: none"> NSAIDs PRN as directed Gabapentin if necessary (up to 1800 mg/day)
Week 2	<ul style="list-style-type: none"> 1 tab po q4 hrs PRN Dispense #42 	<ul style="list-style-type: none"> Scheduled APAP 500mg po q12 hrs (can increase as combined opioid analgesic decreases)
Week 3	<ul style="list-style-type: none"> 1 tab po q6 hrs PRN Dispense #28 	<ul style="list-style-type: none"> Scheduled APAP 1000mg po q12 hrs (can increase as combined opioid analgesic decreases)
Week 4	<ul style="list-style-type: none"> 1 tab po q8 hrs PRN Dispense #21 	<ul style="list-style-type: none"> Scheduled APAP 1000mg po q8 hrs (can increase as combined opioid analgesic decreases)
Week 5+		<ul style="list-style-type: none"> NSAIDs PRN as directed APAP PRN as directed Gabapentin if necessary (then wean)

APAP = acetaminophen

Hsu JR, Mir H, et al. *J Orthop Trauma*. 2019;33(5):e158-e182.

RECOMMENDATIONS FOR PAIN MEDICATION FOLLOWING MINOR MUSCULOSKELETAL INJURY PROCEDURE: POST-DISCHARGE

	Opioid	Non-Opioid
Week 1	<ul style="list-style-type: none"> • Hydrocodone/APAP 5mg/325mg or tramadol 50mg • 1 tab po q6 hrs PRN, Dispense #28 • 1 time Rx, No refills 	<ul style="list-style-type: none"> • Ibuprofen 600mg po q8 hrs x 7 days (Rx given) • Gabapentin 100mg 1 tab po TID x 7 days (Rx given) • Scheduled APAP 500mg po q12 hrs x 7 days (can increase as combined opioid analgesic decreases)
Week 2	<ul style="list-style-type: none"> • Hydrocodone/APAP 5mg/325mg or tramadol 50mg • Only if necessary, 2 Rx Max • 1 tab po q8 hrs PRN Dispense #21 	<ul style="list-style-type: none"> • NSAIDs PRN as directed • Gabapentin if necessary (up to 1800 mg/day) • Scheduled APAP 1000mg po q8 hrs (can increase as combined opioid analgesic decreases)
Week 3	<ul style="list-style-type: none"> • 1 tab po q12 hrs PRN Dispense #14 	<ul style="list-style-type: none"> • NSAIDs PRN as directed • Gabapentin if necessary (up to 1800 mg/day) • Scheduled APAP 1000mg po q8 hrs (can increase as combined opioid analgesic decreases)
Week 4		<ul style="list-style-type: none"> • NSAIDs PRN as directed • APAP PRN as directed

RECOMMENDATIONS FOR PAIN MEDICATION FOLLOWING NON-OPERATIVE MUSCULOSKELETAL INJURY

Injury Category	Opioid	Non-Opioid
Minor Injury (e.g. small bone fracture, sprain, laceration, etc.)	<ul style="list-style-type: none">• Tramadol 50mg• Only if necessary, 2 Rx Max• 1 tab po q6 hrs PRN, Dispense #20, then #10	<ul style="list-style-type: none">• NSAIDs PRN as directed• Scheduled APAP 1000mg po q8 hrs, then PRN as directed
Major Injury (e.g. large bone fracture, rupture, etc.)	<ul style="list-style-type: none">• Hydrocodone/APAP 5mg/325mg or tramadol 50mg• Only if necessary, 2 Rx Max• 1 tab po q6 hrs PRN• Dispense #20, then #10	<ul style="list-style-type: none">• NSAIDs PRN as directed• Scheduled APAP 1000mg po q12 hrs, then PRN as directed

EDUCATION ON SAFE STORAGE AND DISPOSAL OF UNUSED MEDS



- Opioids should be stored inside lockbox and/or secure location
- Medication take-back programs
 - DEA-registered collection sites at retail/hospital/clinic pharmacies and law enforcement
 - Check www.takebackmymeds.com for additional details
- Disposal in household trash
 - Mix (do not crush tablets or capsules) with an unpalatable substance such as dirt, cat litter, or used coffee grounds and seal in plastic bag
 - Delete personal information from the prescription label before disposing
- Disposal in a drug deactivation pouch that utilizes carbon to deactivate and dispose in household trash
- FDA endorses flushing, but many oppose due to concerns about aquatic life

PATIENT EDUCATION IS IMPORTANT



- Education to help patients better understand their pain is essential
- A reasonable goal is a 30% reduction in pain which is considered meaningful and improve daily functioning
- Setting clear goals and expectations is critical!
- Provide education about what the patient can and should do to feel better and be more active
 - Non-pharmacological therapies: Cognitive behavioral therapy, relaxation training, mindfulness
 - Exercise and movement without significant pain increase
- Discuss healthy self-care, necessity of taking an active role in treatment

BRAIN AND ADDICTION PATHWAYS

Augmented Reality



Dopamine Pathways

Serotonin Pathways

Frontal cortex

Striatum

Substantia nigra

Functions

- Reward (motivation)
- Pleasure, euphoria
- Motor function (fine-tuning)
- Compulsion
- Perseveration

Nucleus accumbens

VTA

Hippocampus

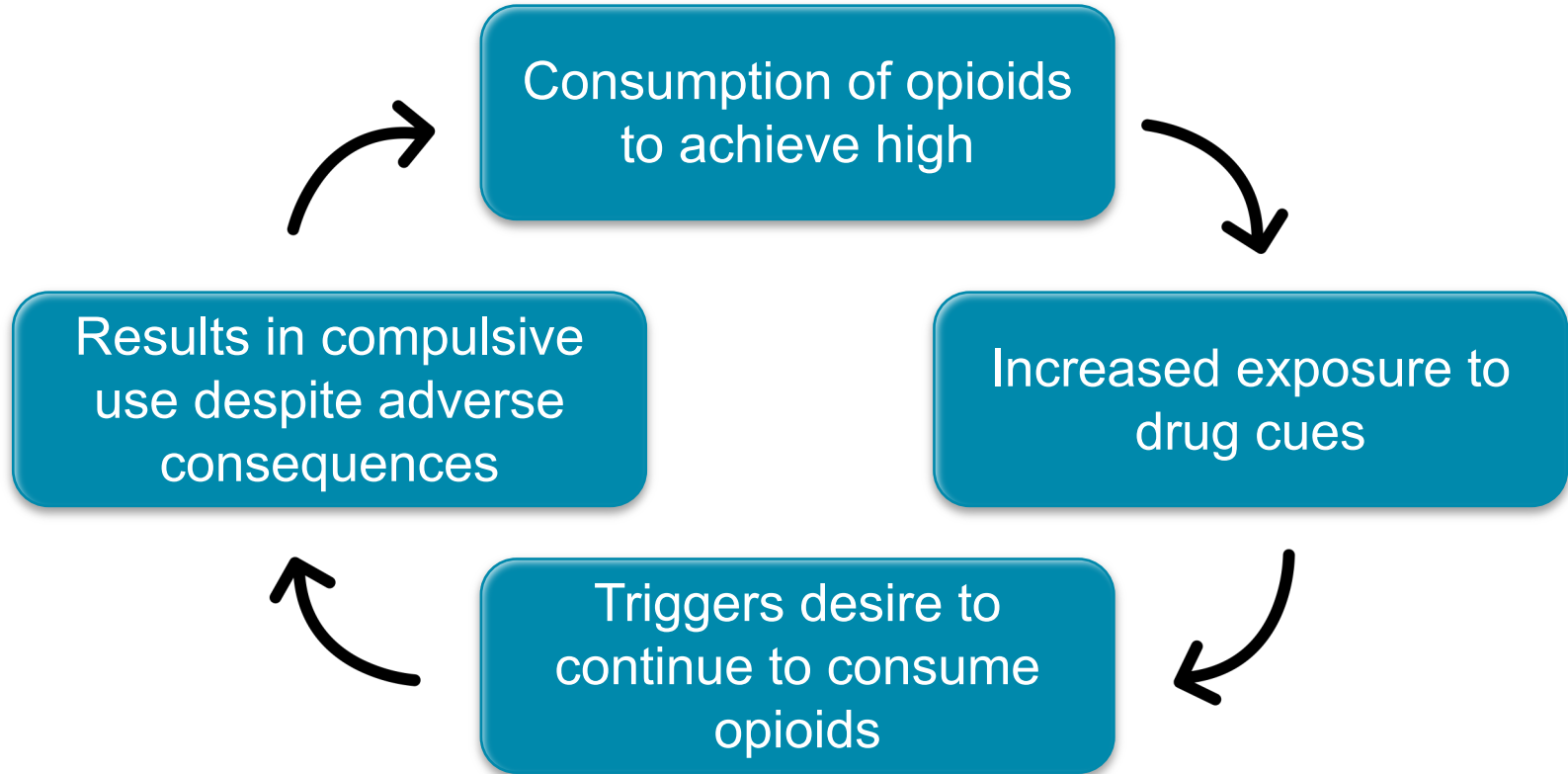
Raphe nucleus

Functions

- Mood
- Memory processing
- Sleep
- Cognition

NIDA

CYCLE OF ADDICTION



MITIGATING ADVERSE CONSEQUENCES OF THE OPIOID CRISIS



- 2.1M to 6M individuals with opioid use disorder
- At most, 20% to 40% of persons with OUD receiving treatment
- Policies that expand access to and delivery of evidence-based treatment are critical to reducing the risk of opioid overdose

FDA-APPROVED MEDICATIONS TO TREAT OPIOID USE DISORDER



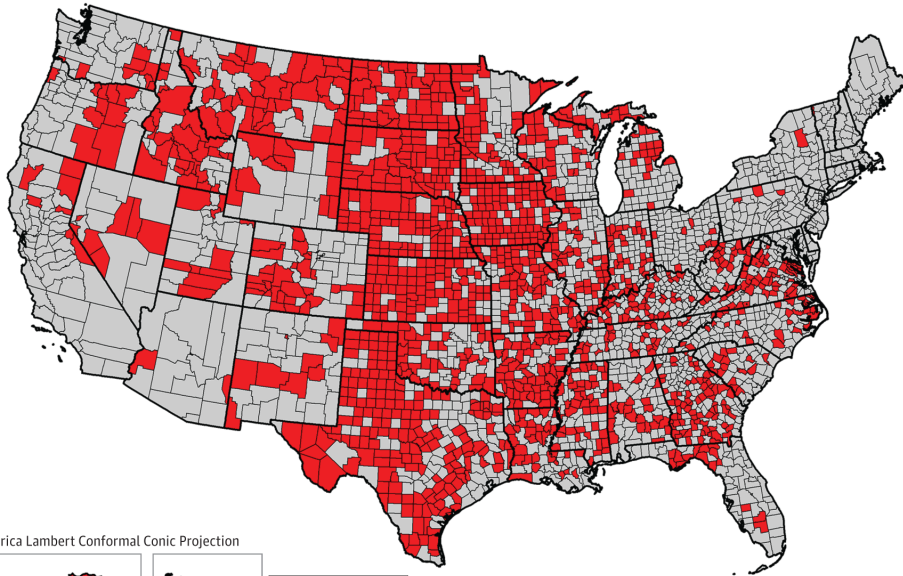
Medication	Receptor Pharmacology	Formulation
Methadone	Full mu opioid agonist	<ul style="list-style-type: none">• Oral solution, liquid concentrate, tablet/diskette, powder
Buprenorphine	Partial mu opioid agonist	<ul style="list-style-type: none">• Once monthly injection for subcutaneous use
Buprenorphine-naloxone	Partial mu opioid agonist/mu antagonist	<ul style="list-style-type: none">• Sublingual film• Sublingual tablets
Naltrexone	Mu opioid antagonist	<ul style="list-style-type: none">• Extended release injectable suspension

Prescribing information available at <https://www.accessdata.fda.gov>

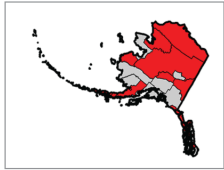
Center for Substance Abuse Treatment. Medication-Assisted Treatment for Opioid Addiction in Opioid Treatment Programs. Rockville (MD): SAMSHA (US); 2005. (Treatment Improvement Protocol (TIP) Series, No. 43.) Chapter 3. Pharmacology of Medications Used to Treat Opioid Addiction. Available from:

<https://www.ncbi.nlm.nih.gov/books/NBK64158/>

US COUNTIES LACKING ANY PUBLICLY AVAILABLE OUD MEDICATION PROVIDER, 2017



North America Lambert Conformal Conic Projection



■ ≥ 1 MOUD provider
■ No MOUD provider

- Of 3142 US counties 751 (23.9%) had high rates of opioid overdose mortality
- 1457 (46.4%) and 946 of 1328 rural counties (71.2%) lacked a publicly available OUD medication provider in 2017

NALOXONE



- Not a “cure” but reverses the dangers of an opioid overdose allowing medical treatment and hopefully prevent death
- Ensuring ready access to naloxone is one of *SAMHSA’s Five Strategies to Prevent Overdose Deaths*
- All 50 states + DC have legislation increasing access
 - Allows naloxone distribution by pharmacists
 - Simplify the process of obtaining naloxone
 - Distribution beyond those at risk for overdose
- 46 states have Good Samaritan laws that protect bystanders and individuals from arrest or prosecution for administering naloxone in good faith

NALOXONE SAVES LIVES, BUT ONLY IF AVAILABLE WHEN OVERDOSE OCCURS



- Overdose deaths declined between 2017-2018
- The number of naloxone prescriptions dispensed doubled between 2017-2018
- **But** only 1 naloxone prescription dispensed for every 70 high-dose opioid prescriptions
- Rural counties are 3x more likely to be a low-dispensing county vs. metropolitan counties
- Naloxone dispensing is 25x greater in the highest-dispensing counties vs. the lower dispensing counties

NALOXONE



- Three FDA-approved formulations
 - Injectable
 - Autoinjectable
 - Prefilled autoinjection device
 - Once activated, device provides verbal instructions to the user
 - Prepackaged nasal spray, no assembly
 - Prefilled, needle-free device
 - Sprayed into one nostril while patients lay on their back
- Proper education about the use of naloxone is critical
- Tools are available to share with your patients
 - SAMHSA Opioid Overdose Prevention Toolkit
 - Tools and videos about naloxone and its administration are available at the Patient Opioid Education Hub at www.cmeoutfitters.com

SMART GOALS

Specific, Measurable, Attainable, Relevant, Timely



- Integrate risk assessment tools into clinical workflow
- Approach treatment decisions based on the type of pain the patient presents with
- Educate patients about their pain to appropriate set expectations and treatment goals
- Address gaps in access to medication for OUD
 - Consider becoming waived!
- Provide patients at risk with access to naloxone

QUESTIONS & ANSWERS



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www.cmeoutfitters.com/Rx4PainResources



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Free resources and education to educate both HCPs and patients on pain & appropriate pain management, substance use, and more.

www.cmeoutfitters.com/RX4Pain



NEW FROM CME OUTFITTERS **OPIOID PATIENT EDUCATION HUB**

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