2023 CMSA Abstract
The Crazy Specialty of Pain Management: Advances and Controversies
October 12, 2023

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Pain Management, Nurse Practitioner
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Michigan Educational Requirements for License Renewal

*Each medical doctor is required to complete 150 hours of continuing education in courses or programs approved by the board of which a minimum 75 hours of the required 150 hours must be earned in courses or programs designated as Category 1 programs. A minimum of 1 hour of continuing education must be earned in the area of medical ethics. Effective December 6, 2017 **a minimum of 3 hours of continuing education must be earned in the area of pain and symptom management.**

*Under **Michigan** law, all RNs and LPNs are **required** to complete 25 **continuing education** contact hours, **with two hours of pain and symptom management, during the two years preceding application for license** renewal. A one-time Human Trafficking **CE** is also **required**.

- ***R 338.7004 Implicit bias training standards** Rule 4. 1) Beginning June 1, 2022 and for every renewal cycle thereafter, shall have completed a **minimum of 1 hour of Implicit bias training for each year of the applicant's license or registration cycle. RNs two hours required.**

Objectives

After attending this session, professionals will be able to:

Knowledge: Demonstrate knowledge of evidenced-based pain management.

Describe the meaning of multimodal pain management.

Identify one future trend in pain management.

The State of Pain

1. Yong R et al. *Pain* 2022
2. Cordell WH, et al. *Am J Emerg Med*. 2002
3. Gaskin DJ, Richard P. *J Pain* 2012
4. Dahlammer J et al. *MMWR Morb Mortal Wkly Rep* 2018

Pain - by the numbers

U.S. PAIN FOUNDATION

CHRONIC PAIN FACTS

WHAT IS CHRONIC PAIN?

Chronic pain can be defined as pain that persists most days or every day for six months or more. For some individuals, pain can last a lifetime.

Chronic pain can take many forms:

- MILD TO SEVERE
- INTERMITTENT TO CONTINUOUS
- ANNOYING TO DISABLING

Prevalence

50 MILLION American adults, or 20 percent of the population, live with chronic pain.

20 MILLION or 7% of American adults live with high-impact pain, or pain that frequently limits life or work activities.

Pain is the **NUMBER ONE** reason Americans access the health care system.

Impact and cost

Chronic pain is **THE LEADING CAUSE** of long-term disability in the United States.

The nation spends up to **$635 BILLION EACH YEAR** on chronic pain in terms of medical treatments, disability payments, and lost productivity.

Chronic pain has biopsychosocial implications. It is associated with **REDUCED QUALITY OF LIFE**, including increased risk of anxiety and depression.

CHRONIC PAIN PATIENTS ARE OFTEN OVERLOOKED AND UNDERTREATED.

Veterinary students **SPEND 5X** as many education hours focused on pain management as medical students.

At least **10 PERCENT** of all suicide cases in America involve someone with chronic pain.

For every **10,000 PEOPLE** with severe pain, there is only **ONE BOARD-CERTIFIED** pain specialist.

Patients receive an average of **ONLY 30% PAIN REDUCTION** from their various treatments.

The National Institutes of Health dedicates approximately **2 PERCENT** of its funding to pain research.

Studies have shown that **MINORITY GROUPS** and other marginalized populations are at risk of receiving suboptimal pain management.

76.9 billion is spent on the diagnosis and management of low back pain & an additional $10-$20 billion is attributed to economic losses in productivity each year.

Institute of Health Metrics & Evaluation, 2020

Tolerance, Physical Dependence & Addiction

- **Tolerance**
  - Effects diminish over time. Tolerance is not an inevitable consequence of chronic opioid therapy

- **Physical dependence**
  - A predictable physiological response that occurs with continuous use
  - Manifest by symptoms of withdrawal if use is abruptly discontinued or an antagonist is given
  - Taper the dose to prevent withdrawal

- **Addiction**
  - A primary, chronic, neurobiologic disease: impaired control over drug use, compulsive use, craving and continued use despite harm
  - Addiction is a complex condition, a brain disease that is manifested by compulsive substance use despite harmful consequence

American Psychiatric Association, 2017

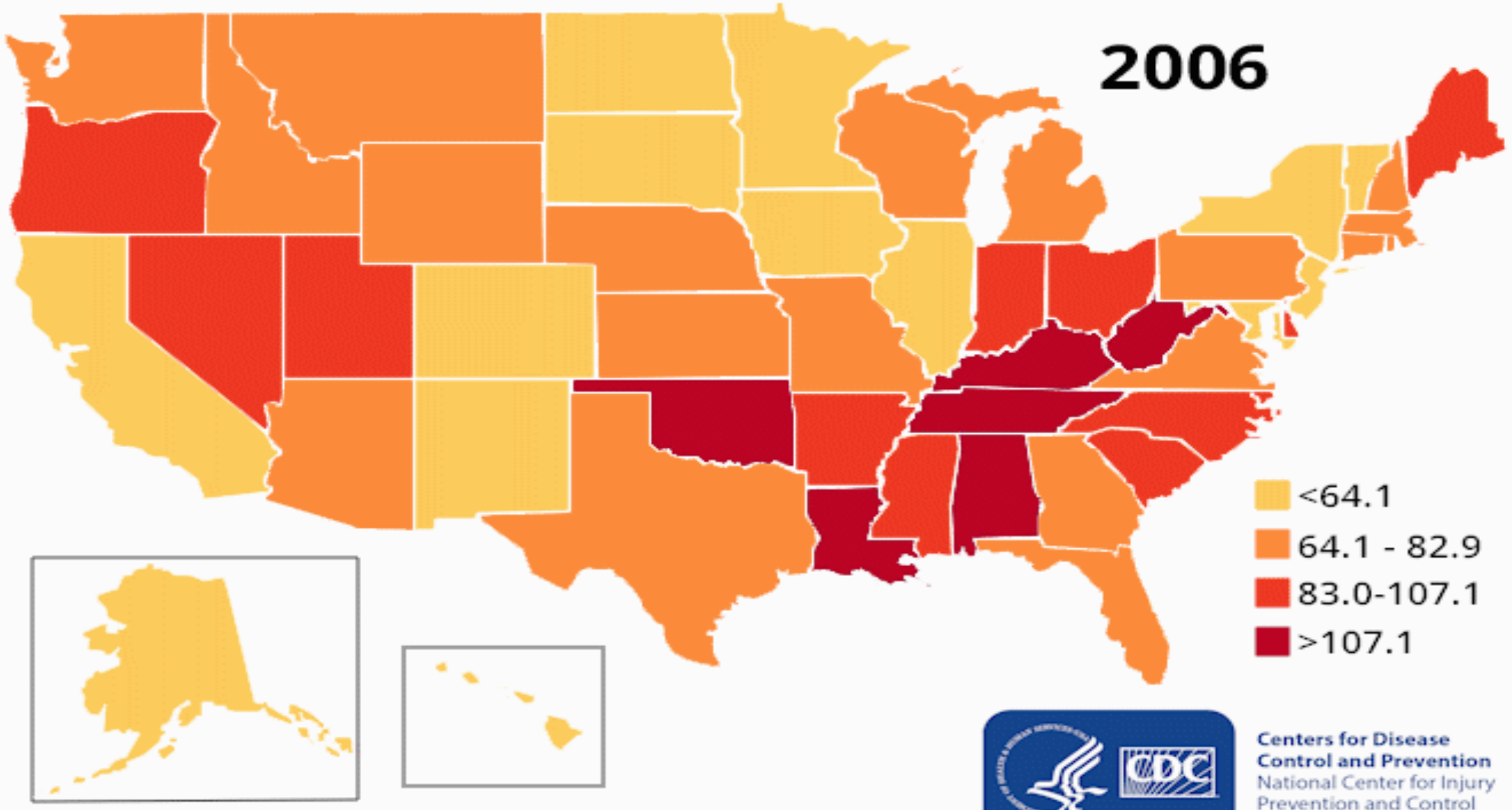
Pseudo Addiction

- "Addiction-like" behavior may signal inadequate pain control or intensification, progression of pain


Dependence
Heroin
Detox
Adverse
Withdrawl
Drugs
Fatal
Laws
Addiction
Epidemic
Depression
Abuse
Overdose
OPIOID CRISIS
Usage
Communities
Deaths
Injections
Usage
Addiction
Treatment
Political
Fatal
Controll
Policing
Health
Addicts
Controll
Antidote
Families
Drugs
Doctors
Political
Overdose

U.S. Opioid Dispensing Rates per 100 people, from 2006 to 2020

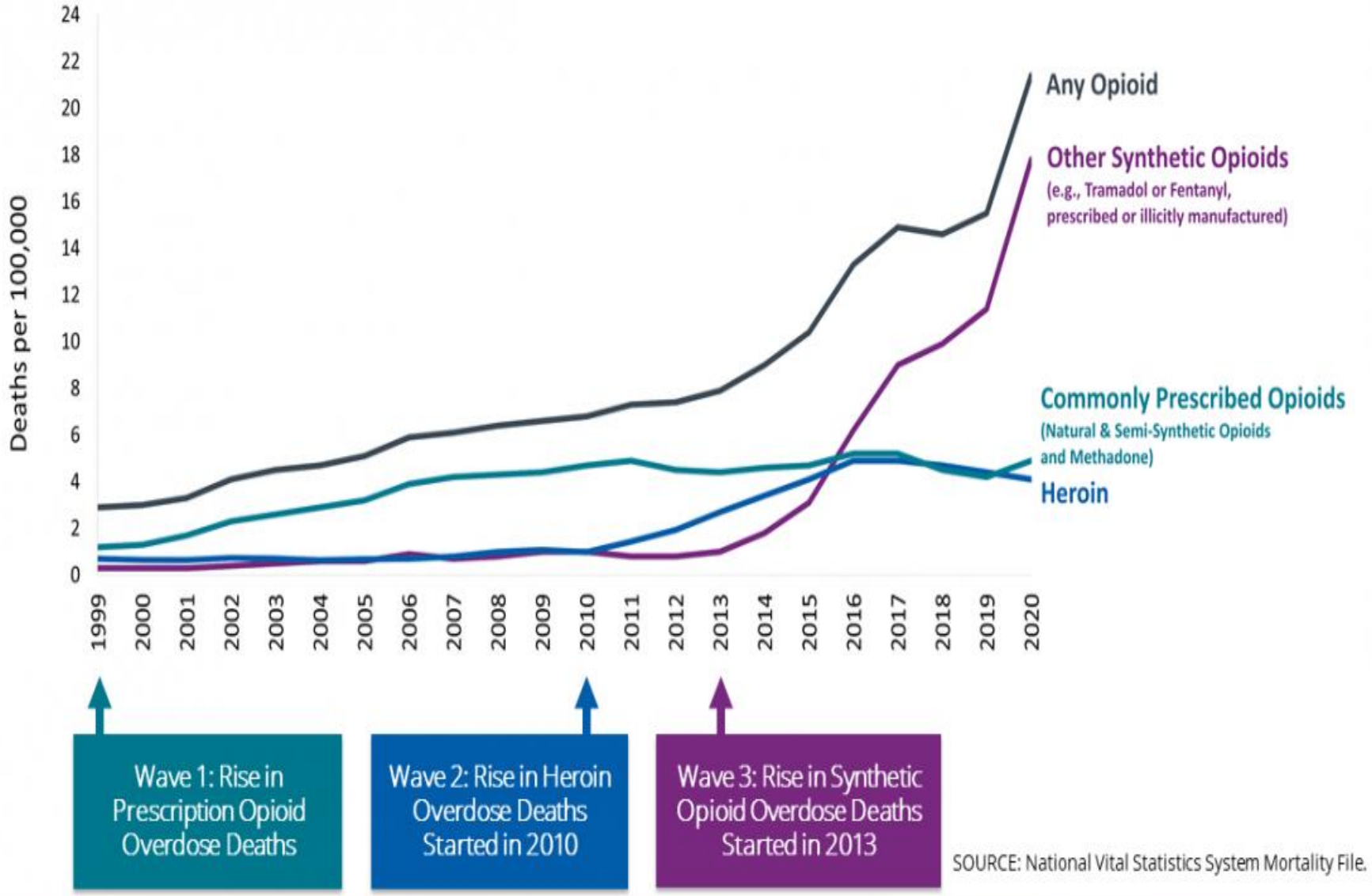
How have rates improved over time?



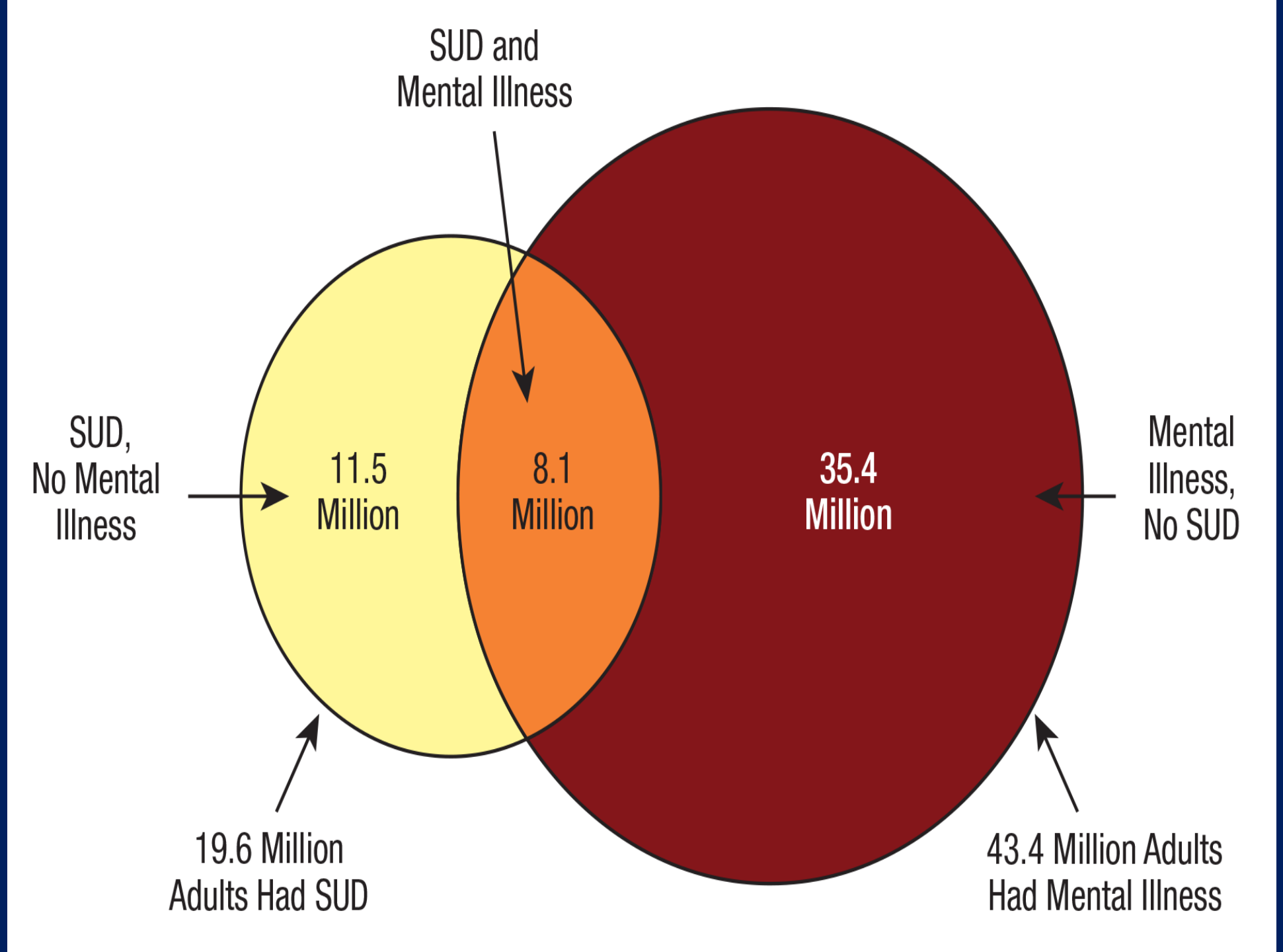
Source: IQVIA Xponent, 2006-2020

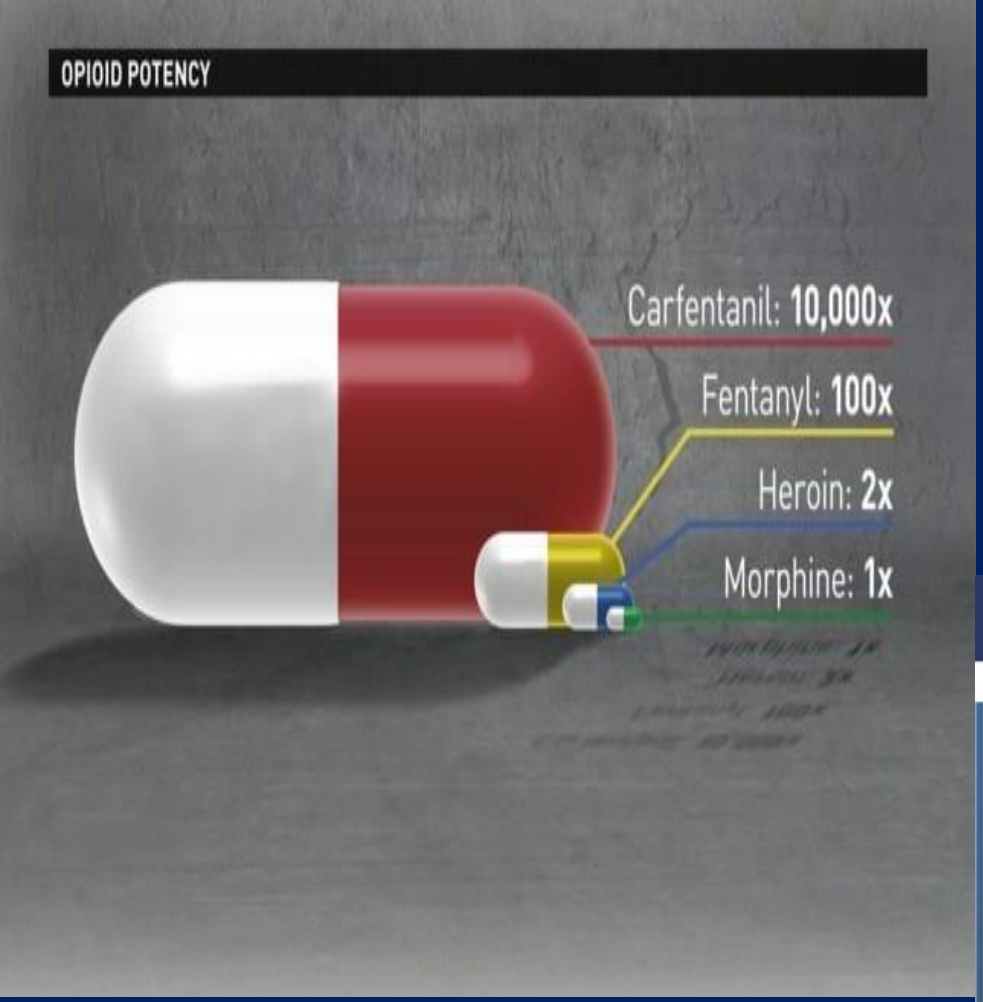
Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

Three Waves of Opioid Overdose Deaths



SOURCE: National Vital Statistics System Mortality File.


SUD and
Mental Illness
SUD,
No Mental
Illness
11.5
Million
8.1
Million
35.4
Million
Mental
Illness,
No SUD
19.6 Million
Adults Had SUD
43.4 Million Adults
Had Mental Illness



August 30, 2022
Contact:
For Immediate Release

Federal Law Enforcement Officials Warn of "Rainbow Fentanyl" Appearing in Oregon

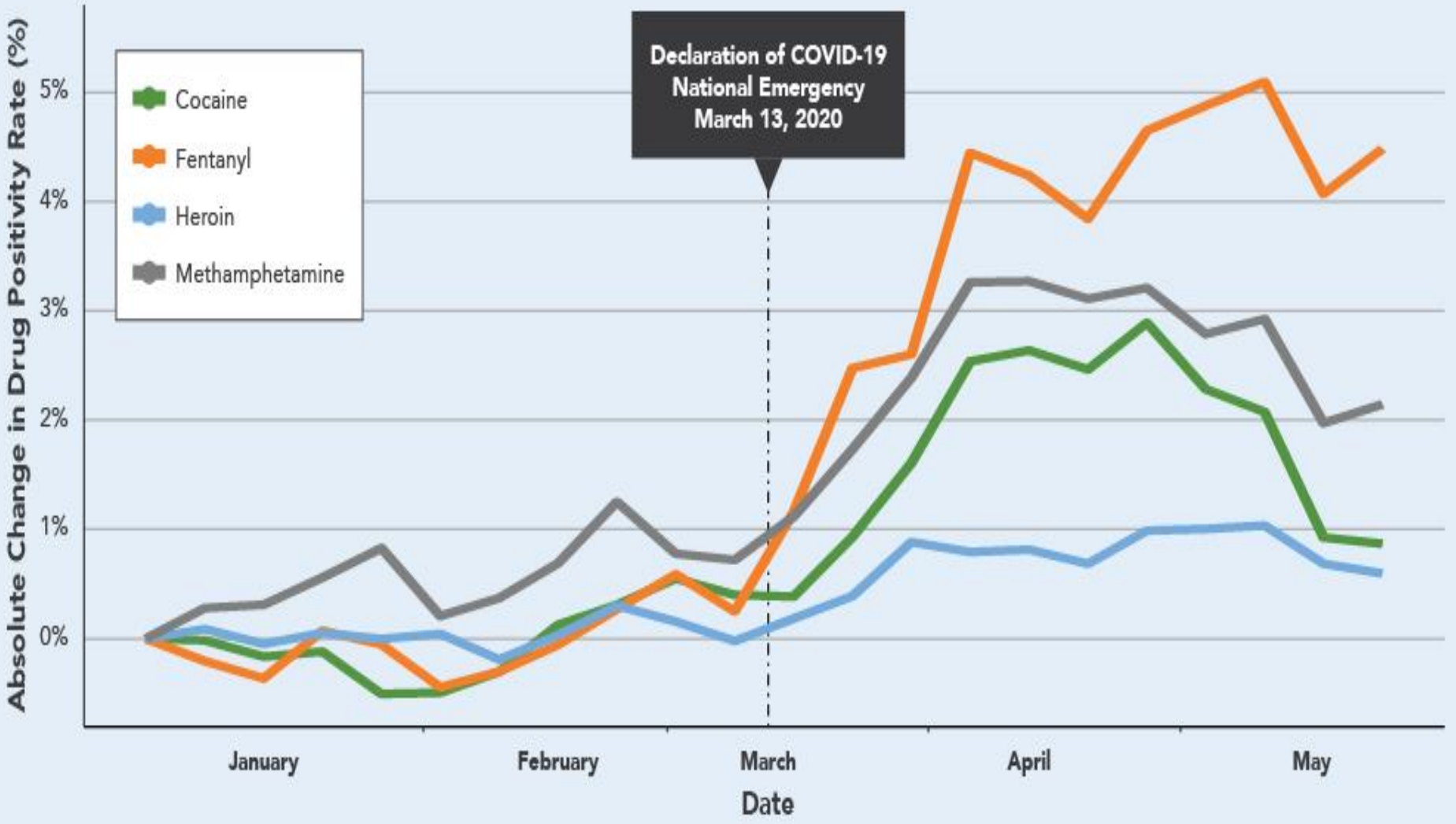
Drug Enforcement Administration

"Rainbow fentanyl—fentanyl pills and powder that come in a variety of bright colors, shapes, and sizes—is a deliberate effort by drug traffickers to drive addiction amongst kids and young adults. The men and women of the DEA are relentlessly working to stop the trafficking of rainbow fentanyl and defeat the Mexican drug cartels that are responsible for the vast majority of the fentanyl that is being trafficked in the United States."

DEA ADMINISTRATOR
ANNE MILGRAM

#DEA

Total Study Population Change in Unadjusted Positivity Rate for Cocaine, Fentanyl, Heroin and Methamphetamine



1 in 7 High school students reported misusing Rx opioids at least once in their lifetime

Schools can:

- Develop substance use prevention programs
- Implement programs with individual, school, and family interventions

CDC.GOV

Youth Risk Behavior Survey, United States, 2019

MMWR

COVID-19 and the opioid crisis: When a pandemic and an epidemic collide

STACY WEINER, SENIOR STAFF WRITER
JULY 27, 2020

- Researchers say it's too soon to have definitive data on the pandemic's effects, but early numbers are concerning. So far, alcohol sales have risen by more than 25%. A recent analysis of 500,000 urine drug tests by Millennium Health, a national laboratory service, also showed worrisome trends: an increase of 32% for nonprescribed fentanyl, 20% for methamphetamine, and 10% for cocaine from mid-March through May. And suspected drug overdoses climbed 18% in the same period, according to a national tracking system run out of the University of Baltimore.

Advances

Reversal Agents

- **Naloxone (pure opioid antagonist)**

  Extremely short half life, 1.07-1.53h, normally longer than opioid being reversed. In the inpatient hospital setting (excludes ER), intravenous route, an ampule of naloxone (0.4mg/ml is diluted with 9 mls of saline for a final concentration of 0.04mg/ml). Initial dose of 2-3 mls administered and then titrated for effect to reverse opioid sedation.

  Caution: Because of short life of naloxone, opioid half life is longer and additional doses of naloxone maybe required. Patient must be continually monitored.

  Now available over the counter-without a script- $44.99

- **Flumazenil (benzodiazepine antagonist)**

  Reversal agent for benzodiazepines, binds to benzodiazepine receptors, enhances GABA effects. Intravenous route, 0.2-0.5 mg q min1 mg., max 5 mg total.

epocrates, athenahealth service (2019)

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Implicit Bias in Pain Management: What you Need to Know

Implicit Bias Definition

"attitudes or stereotypes that affect our understanding, decision making, and behavior, without our even realizing it"

"Implicit bias in the courtroom", UCLA Law Review(2012) by Jerry Kang, et al.

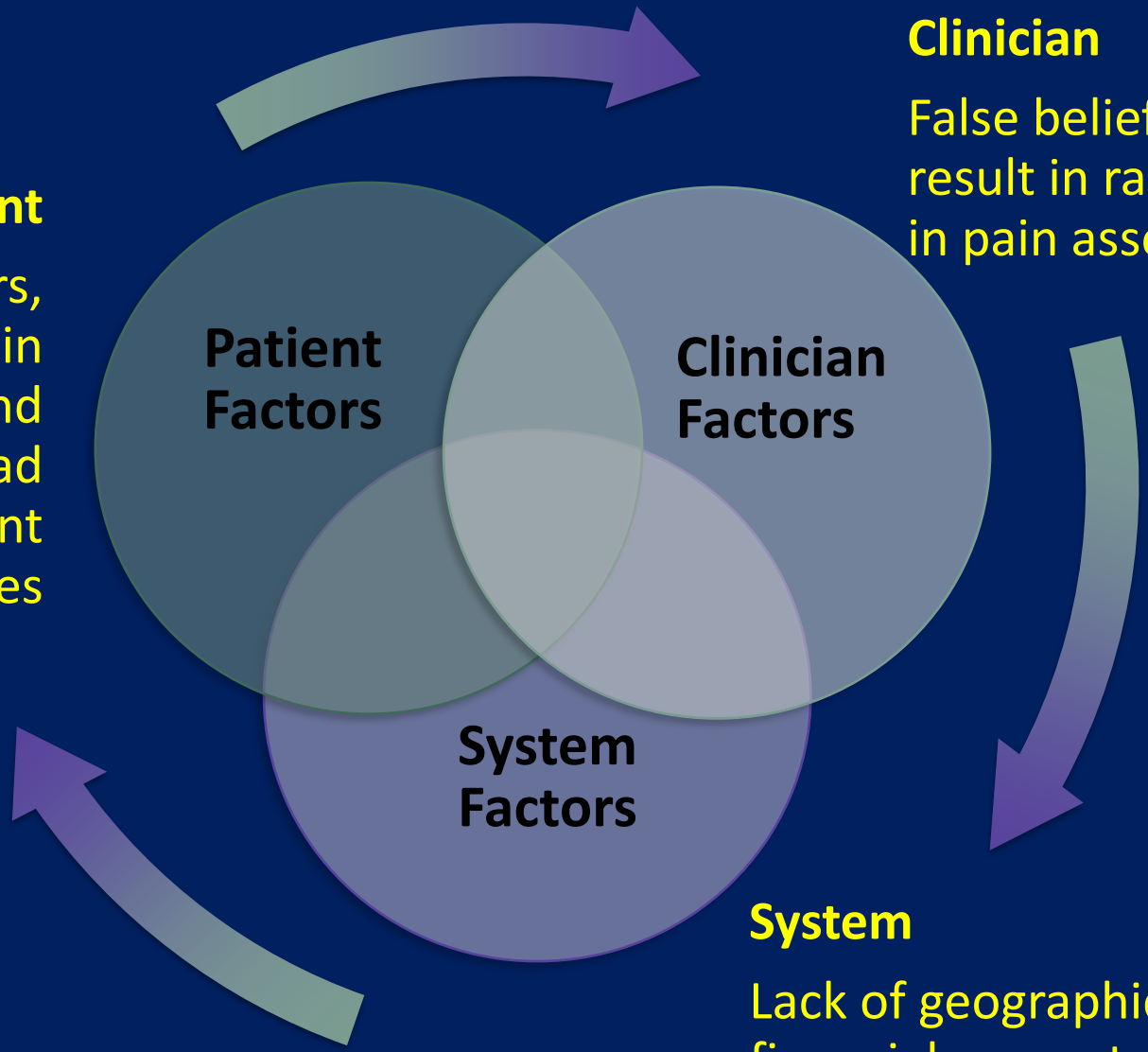
Disparities in Pain Care

Clinician

False beliefs and implicit bias can result in racial and ethnic disparities in pain assessment and treatment

Patient

Language barriers, cultural differences in communication and health literacy can lead to poor pain treatment outcomes



System

Lack of geographic and/or financial access to care

Meints SM, et al. *Pain Manage.* 2019

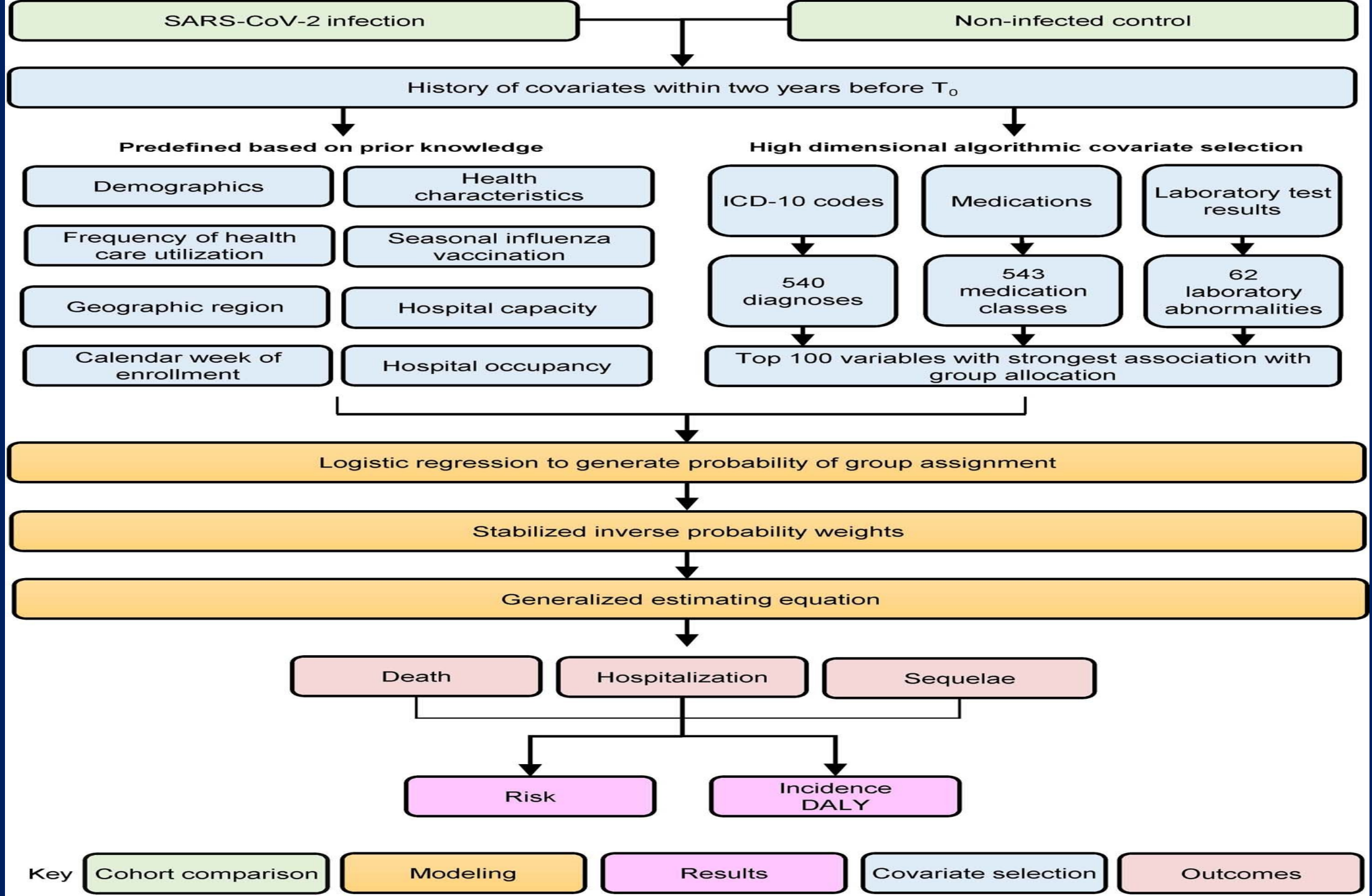
SCOPE of Pain, Boston University. Used with permission

Long Hauler's Covid Symptoms

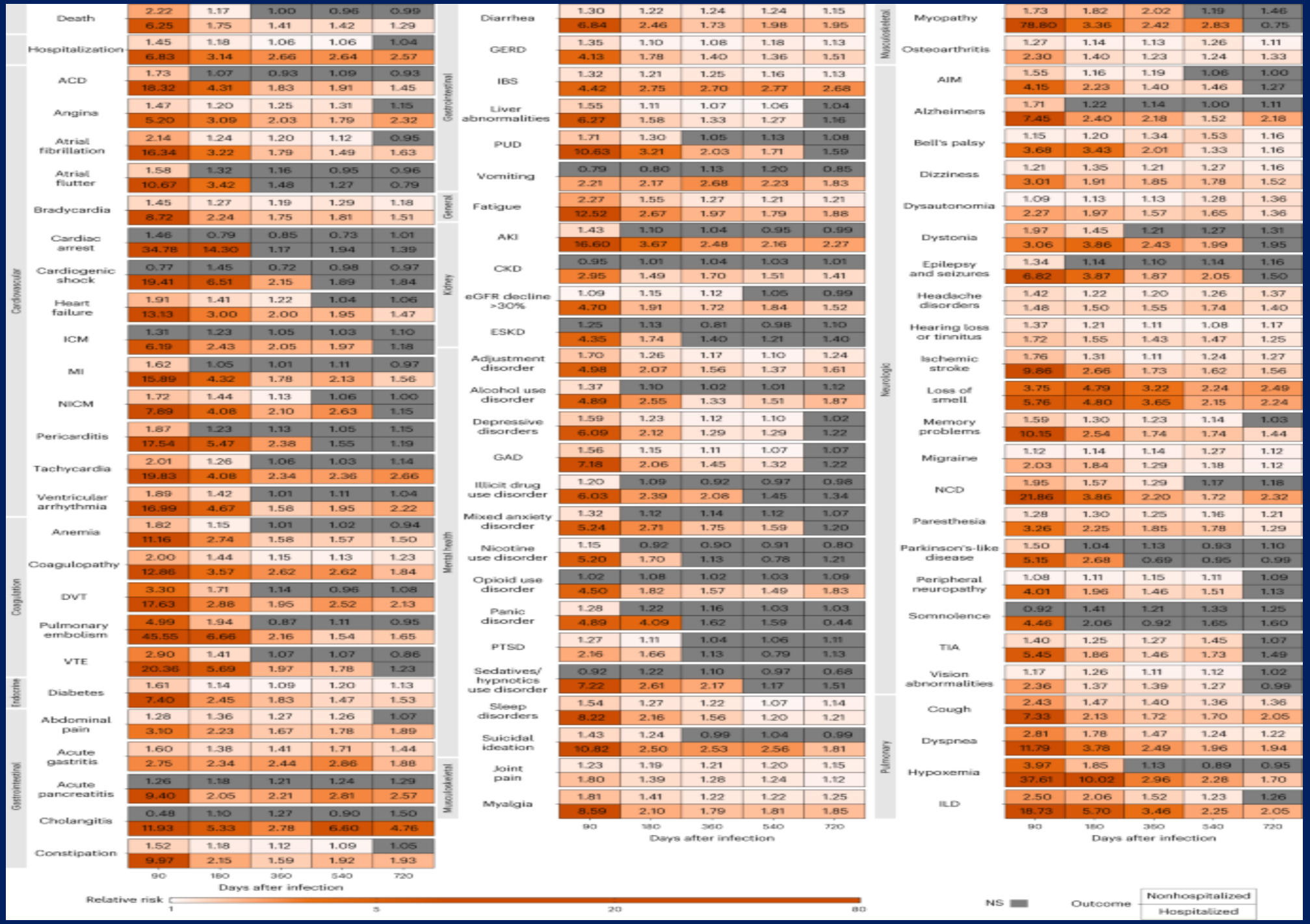
Post acute sequelae of COVID-19 at 2 years

- Cohort of 138,818 individuals with SARS-CoV-2 infection
- 5,985,227 noninfected control group
- US Department of Veterans Affairs
- Followed for 2 years to estimate the risks of death & 80 prespecified post acute sequelae of COVID-19 (PASC)
- According to care setting during the acute phase of infection
- Among the hospitalized group
  - 50 sequelae (of 77) representing every organ statistically significantly elevated at 2 years
  - Suggesting difficult, protracted road to recovery
- Among the non-hospitalized group
  - Risks of 24 sequelae (of 77) remained elevated
  - Including several gastrointestinal, musculoskeletal and neurologic sequelae
  - Suggesting a longer-lasting risk horizon for these organ systems

Nature Medicine Bowe, et al., 2023


SARS-CoV-2 infection
Non-infected control
History of covariates within two years before T_0
Predefined based on prior knowledge
High dimensional algorithmic covariate selection
Demographics
Health characteristics
Frequency of health care utilization
Seasonal influenza vaccination
Geographic region
Hospital capacity
Calendar week of enrollment
Hospital occupancy
ICD-10 codes
Medications
Laboratory test results
540 diagnoses
543 medication classes
62 laboratory abnormalities
Top 100 variables with strongest association with group allocation
Logistic regression to generate probability of group assignment
Stabilized inverse probability weights
Generalized estimating equation
Death
Hospitalization
Sequelae
Risk
Incidence
DALY
Key
Cohort comparison
Modeling
Results
Covariate selection
Outcomes

Risk of post acute sequelae of COVID-19 up to 2 years after infection by care setting of the acute phase of the disease



Michigan Automated Prescription system (MAPS)

Assessment

- **The Problem with Pain-**
  - **No pain-o-meter, no truth-o-meter!**
  - **Cultural differences**
  - **Diversity in non-verbal reactions to pain, e.g. stoic, red cell disorder patients**
  - **If a patient has a specific surgery, should all patients receive the same pain medication (ortho power plans)**
  - **We are influenced by our past experiences with patients**
  - **Our biases, i.e. patient has SUD**
  - **Purely subjective, typically measured with self-report scale 0-10**

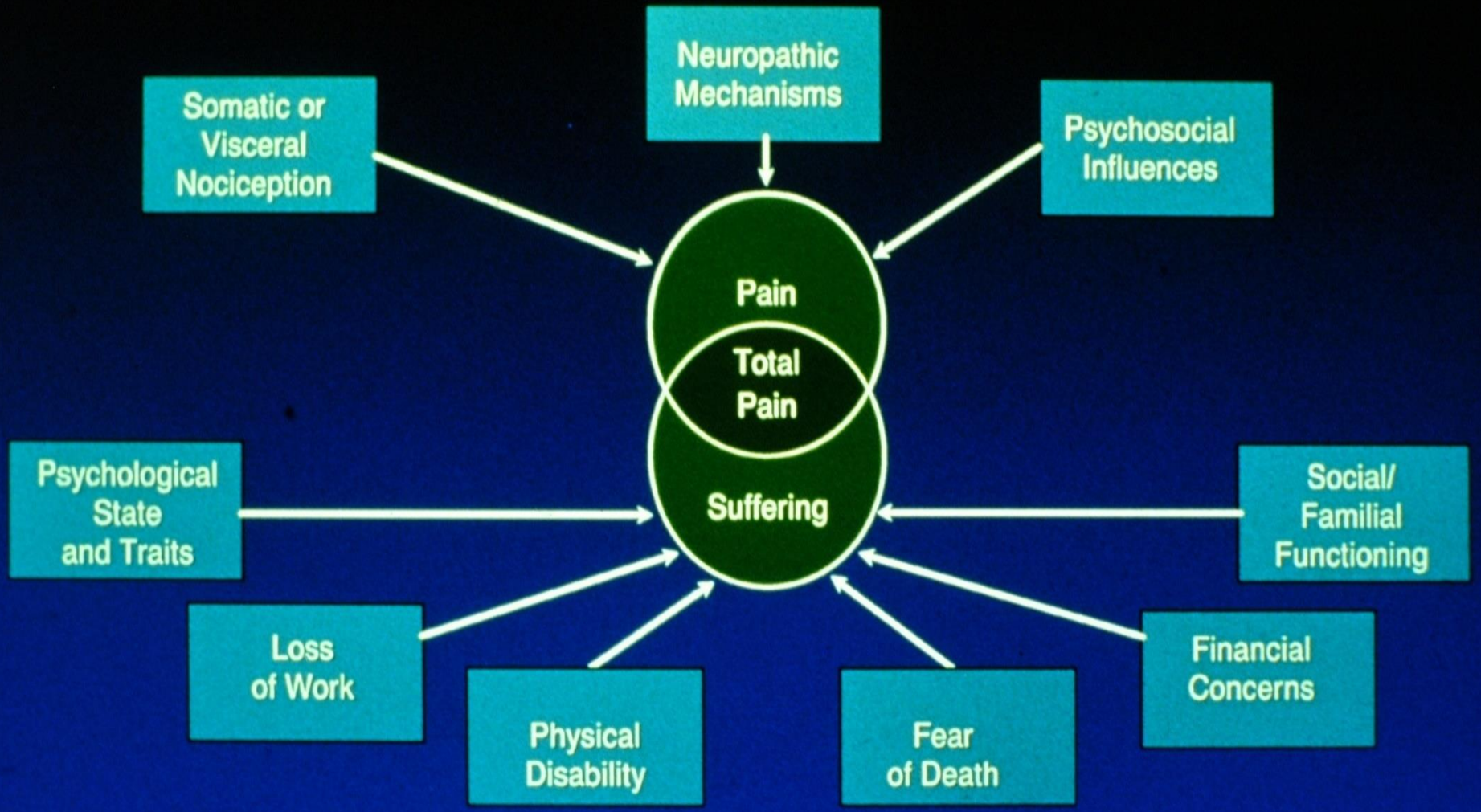
- **Can self report be dangerous?**

Definition of Pain

“Pain is whatever the experiencing person says it is, existing whenever he or she says it does.”

- Margo McCaffery, R.N., M.S., FAAN

Multifactorial Nature of Pain



(Adapted from Portenoy, 1988)

All about Function

- Patient examinations in physical therapy include, but are not limited to, testing of muscle **function**, **strength**, joint **flexibility**, range of motion, **balance** and **coordination**, posture, respiration, skin integrity, **motor function**, quality of life, and **activities** of daily living.

- Occupational therapy practitioners enable people of all ages to live life to its fullest by helping them promote health, and prevent—or live better with—injury, illness, or disability.

- To all the healthcare professionals practicing in the Rehab specialty including nurses, case managers, physical therapists, occupational therapists, and social workers. You have my deepest respect and admiration!

Different Types of Pain

- **Somatic –** localized pain in skin, muscle, bone described as aching, stabbing, throbbing
  - Therapies for somatic pain include NSAIDs (prostaglandin inhibitors), acetaminophen (works centrally), muscle relaxants, ice, and heat

- **Visceral –** non-localized pain in organs or viscera described as gnawing, camping, aching or sharp
  - Therapies for visceral pain include opioids (occupies opioid receptors), and interventional therapies

- **Neuropathic –** pain caused by nerve damage described as sharp, numbness, burning or shooting
  - Therapies for neuropathic pain include antidepressants (inhibits norepinephrine and serotonin re-uptake), anticonvulsants (blocks voltage-dependent calcium channels), local anesthetics, and interventional therapies **caution: anticonvulsants can cause dizziness, potential for falls. Start low and go slow!**
  - Opioids are not the medication of choice for neuropathic pain

- **These types of pain can occur individually or in combination**

Acute Versus Chronic Pain

Acute Pain

Life sustaining symptom

Adaptive by eliciting motivation to minimize harm and allow healing

Chronic Pain

Pain persisting beyond expected healing

Can be a disease in and of itself

Maladaptive disorder influenced by genetic and epigenetic factors

- **Nociceptive**: tissue or potential tissue damage including **somatic** (e.g., bones, joints, muscle) and **visceral** (e.g., mucosal injury, distention, ischemia)
- **Neuropathic**: disease or injury affecting the nervous system including **central** (e.g., trauma, stroke, neurodegenerative) and **peripheral** (e.g., compression, trauma, ischemia)
- **Nociplastic**: amplified processing of, or decreased inhibition of pain stimuli at **multiple levels in the nervous system** including diffuse sensitization (fibromyalgia), function visceral pain (IBS), regional somatic sensitization (complex regional pain syndrome)

Cohen SP, et al. *Lancet*. 2021

SCOPE of Pain, Boston University. Used with permission

Neural Pathways of Pain

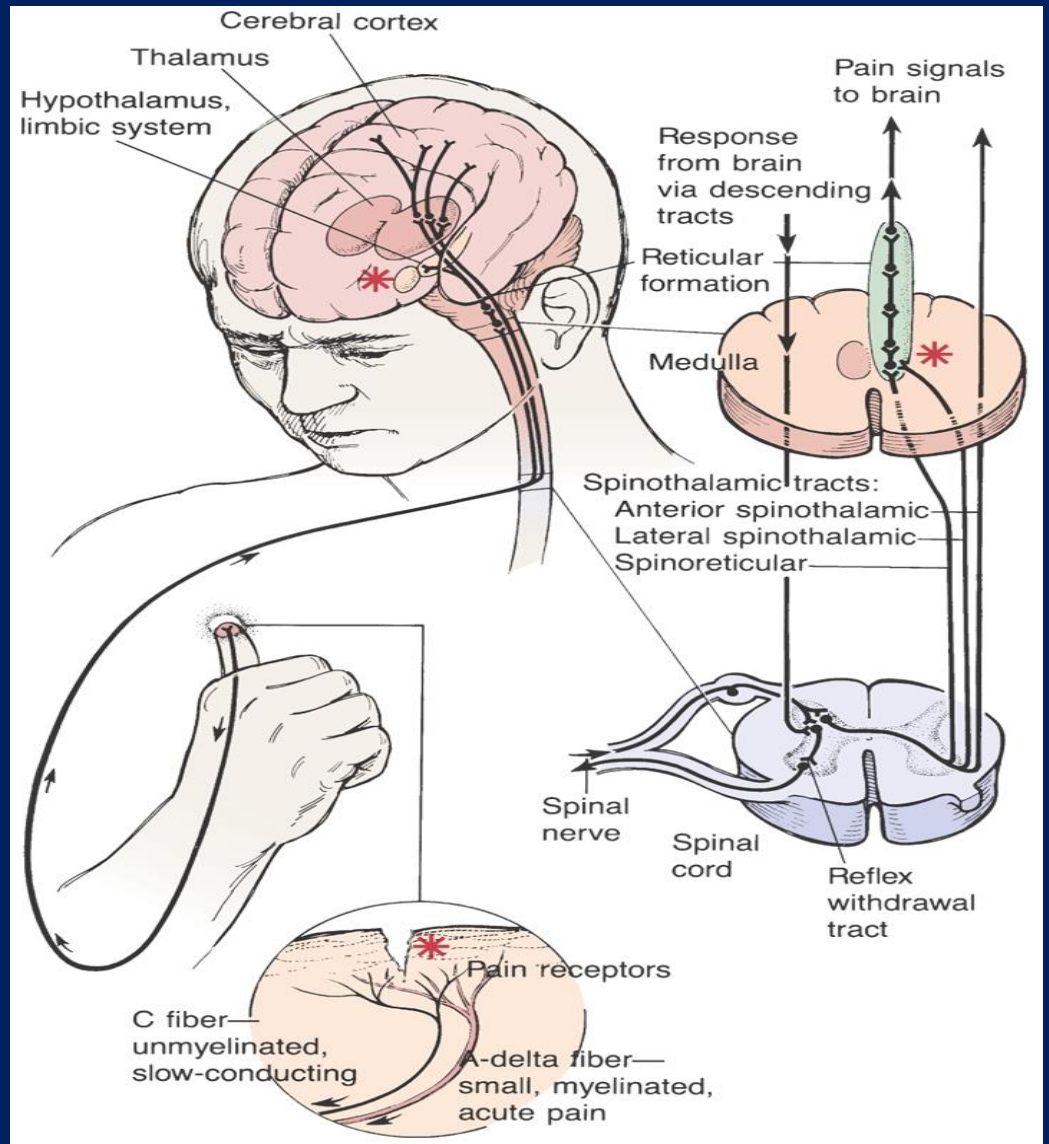
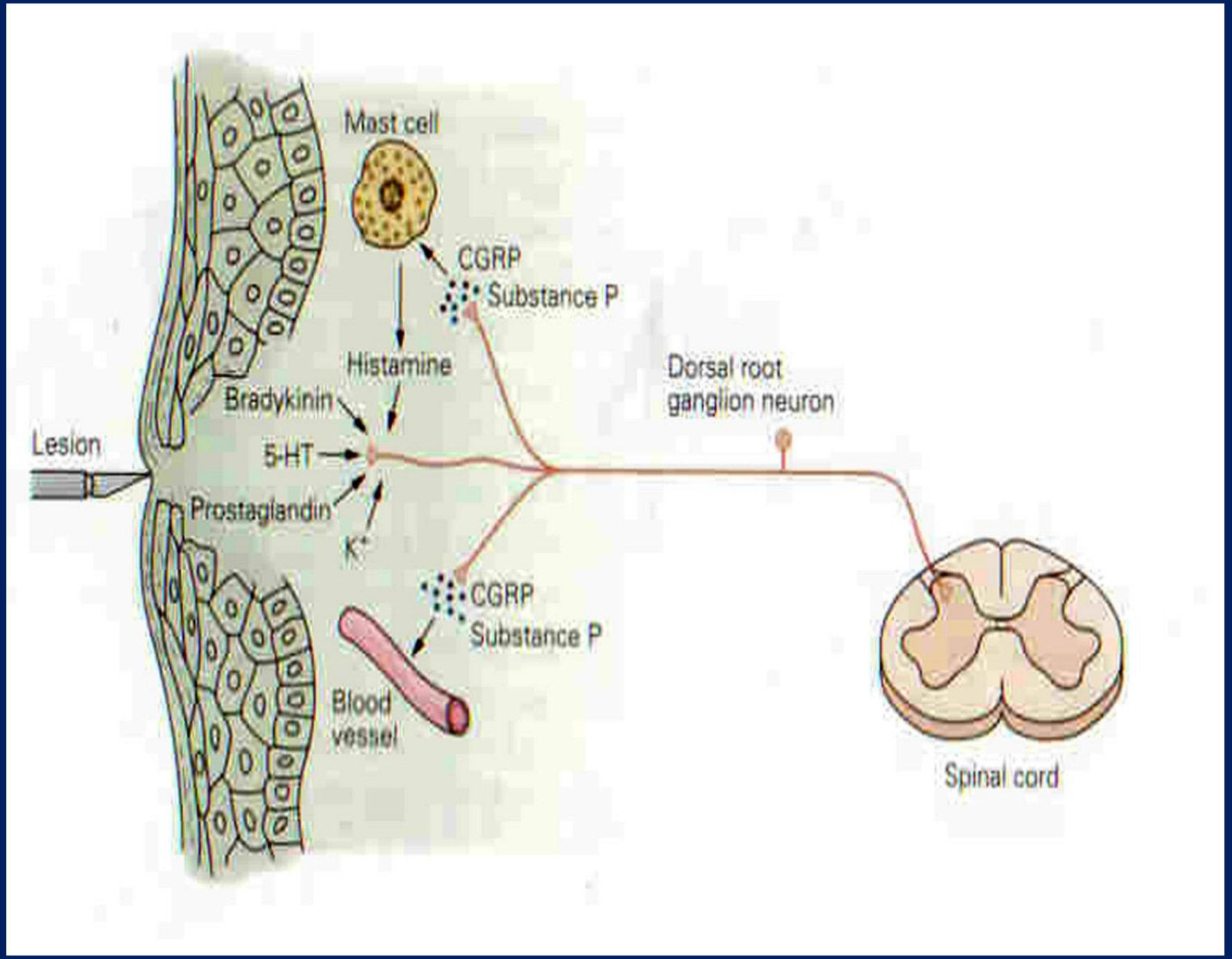


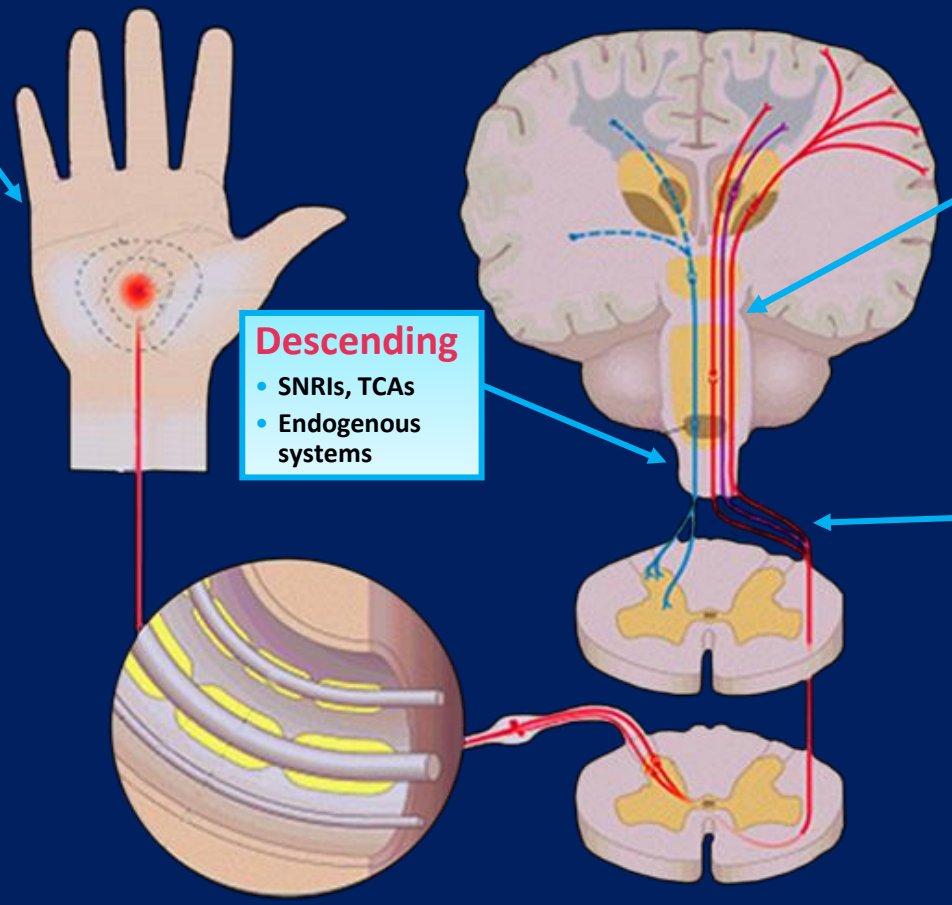
FIGURE 26.1 Neural pathways of pain. (Bullock, B.L. [2000]. *Focus on pathophysiology*. Philadelphia: Lippincott Williams & Wilkins.)


Mast cell
CGRP
Substance P
Histamine
Bradykinin
5-HT
Prostaglandin
K+
Lesion
Dorsal root
ganglion neuron
CGRP
Substance P
Blood
vessel
Spinal cord

Multi-modal Therapy: Clinical Advantages

Peripheral
- Local anesthetics
- Opioids
- Anti-inflammatory agents
- Capsaicin

Central
- Anticonvulsants
- Opioids
- α_2-agonist (clonidine)
- Acetaminophen



Descending
- SNRIs, TCAs
- Endogenous systems

Ascending
- Local anesthetics
- Anticonvulsants
- Opioids
- NMDA antagonists (ketamine)
- α_2-agonist (clonidine)

- Multimodal therapy provides a way to achieve balanced, safer pain therapy[1]
  - Improved quality of analgesia[2,3]
  - Fewer side effects[2,3]
  - Better functional status[4]

1. Gottschalk A, Smith DS. *Am Fam Physician.* 2001;63:1979-1984, 1985-1986.
2. Tiippana EM, et al. *Anesth Analg.* 2007;104:1545-1556.
34. Basse L, et al. *Brit J Surg.* 2002;89:446-453.

Definition of Multi-Modal Pain Management

- A rational approach to pharmacologic therapy is to consider a drug's mechanism of action and the source or type of pain. Multimodal analgesia refers to the use of more than one agent from different pharmacologic analgesic classes that target different mechanisms of CNS or PNS pain.

  ANA, 2011

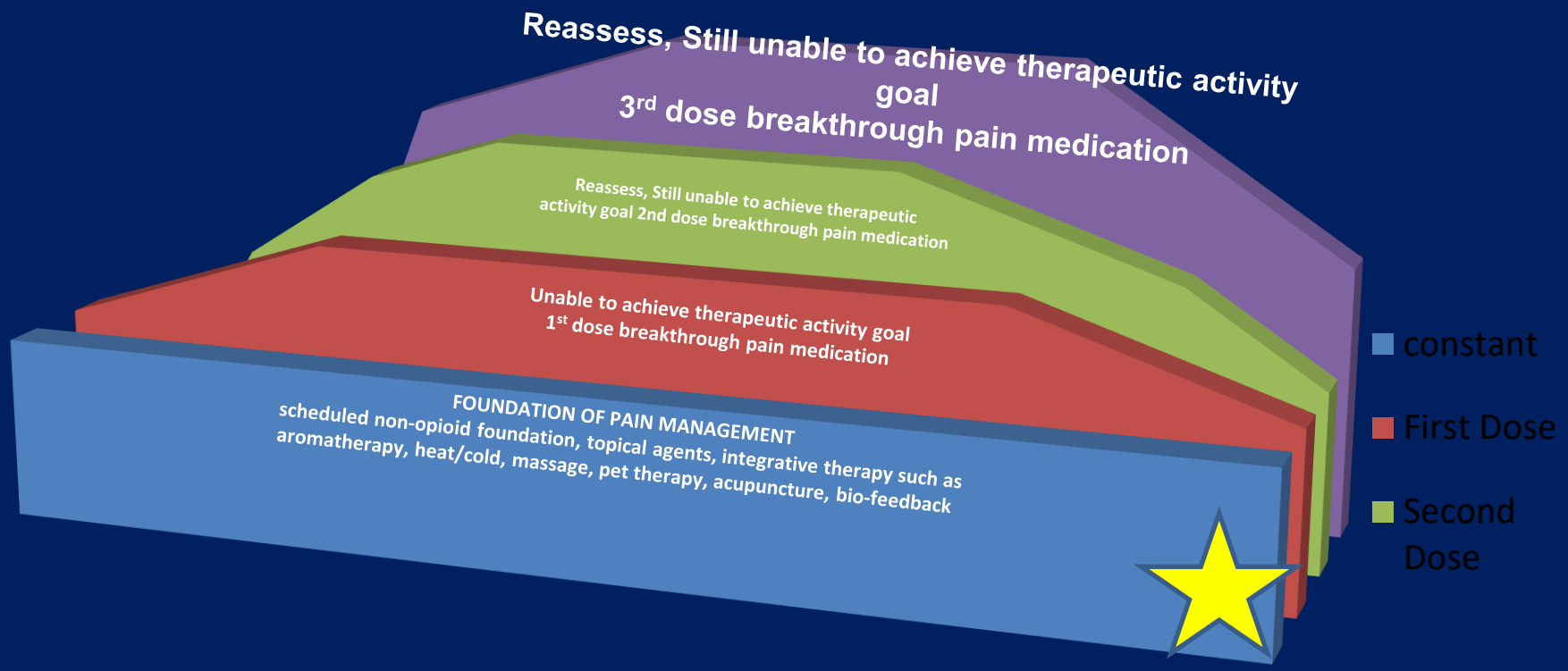
- A multimodal approach to pain management (using two or more different methods or medications to manage pain) rather than using opioids alone.

  ASA, 2018

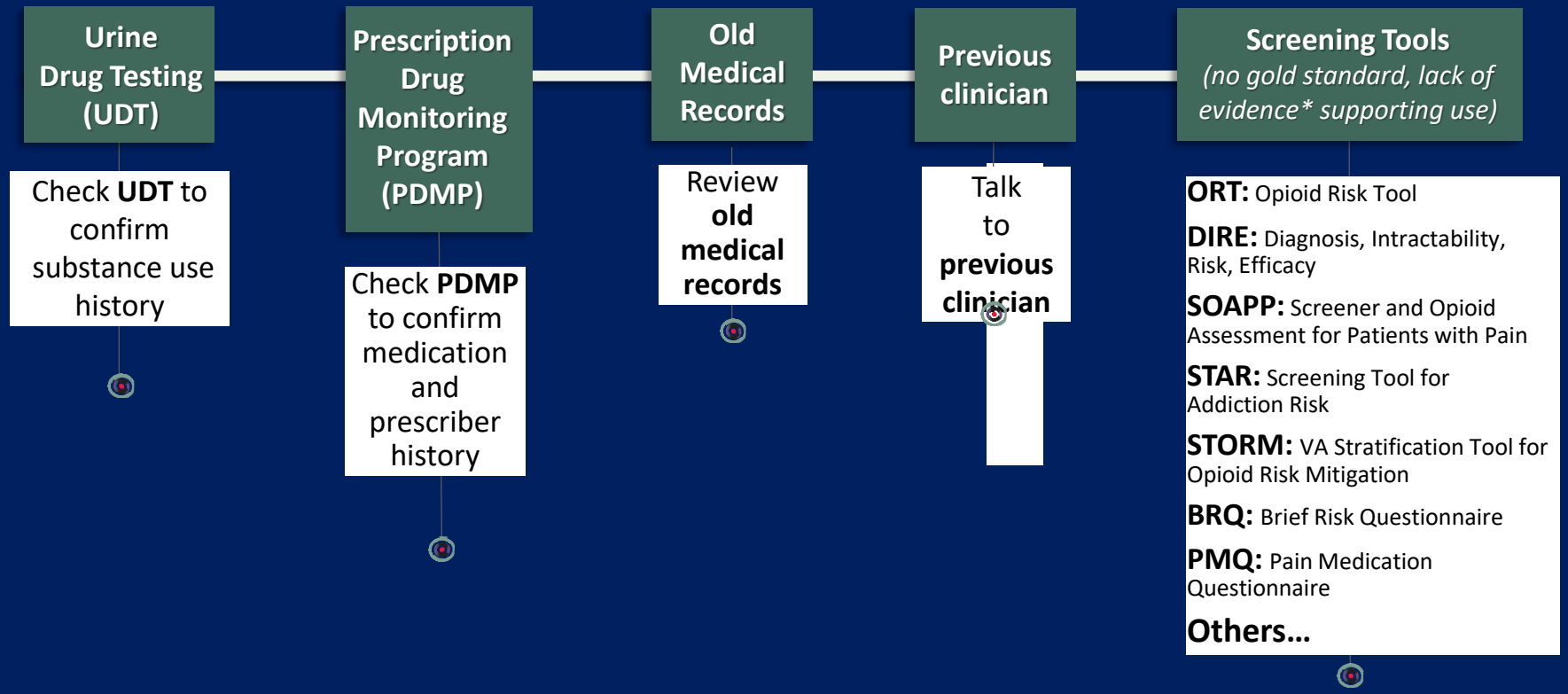
Goals of multimodal analgesia:

- **Improve analgesia quality**
- **Achieve more balanced analgesia**
- **Reduce adverse events** Galloway, 2011
- **Opioid-sparing**
- **Differences between multimodal, integrative, alternative pain management**

Multimodal Pain Management Plan



Assess for Opioid Misuse Risk Prior to Prescribing



Moore TM, et al. *Pain Med*. 2009
*Klimas J et al. *JAMA Network Open*. 2019

Changing Winds

- Are we “opioided out”??
- Is there too much “baggage” with post-operative opioid use?
- What evidence-based pharmaceutical options do we have?
- Are there different mechanisms that can be used?
- Will nature point the way?
- Searching, searching, searching---always searching for the magic bullet!

Meta-Analysis > Lancet. 2022 Jun 18;399(10343):2280-2293.

doi: 10.1016/S0140-6736(22)00582-7.

Opioid versus opioid-free analgesia after surgical discharge: a systematic review and meta-analysis of randomised trials

Julio F Fiore Jr [1], Charbel El-Kefraoui [2], Marc-Aurele Chay [3], Philip Nguyen-Powanda [2], Uyen Do [2], Ghadeer Olleik [2], Fateme Rajabiyazdi [4], Araz Kouyoumdjian [5], Alexa Derksen [6], Tara Landry [7], Alexandre Amar-Zifkin [8], Amy Bergeron [8], Agnihotram V Ramanakumar [9], Marc Martel [10], Lawrence Lee [11], Gabriele Baldini [12], Liane S Feldman [11]

Affiliations + expand

PMID: 35717988 DOI: 10.1016/S0140-6736(22)00582-7

Risk Factors for Developing Chronic Postsurgical Pain

Alterations in:

- Expression of neurotransmitters, receptors, and ion channels
- Structure, connectivity, and survival of neurons

Patient-related

- Younger
- Female
- History of
  - Anxiety
  - Depression
  - Catastrophizing
  - Pre-existing pain syndrome
  - Preoperative opioid use

PERSISTENT PAIN

Intraoperative variables

- Surgical procedure and technique
- Nerve ligation/injury
- Ischemia
- Anesthetic modality

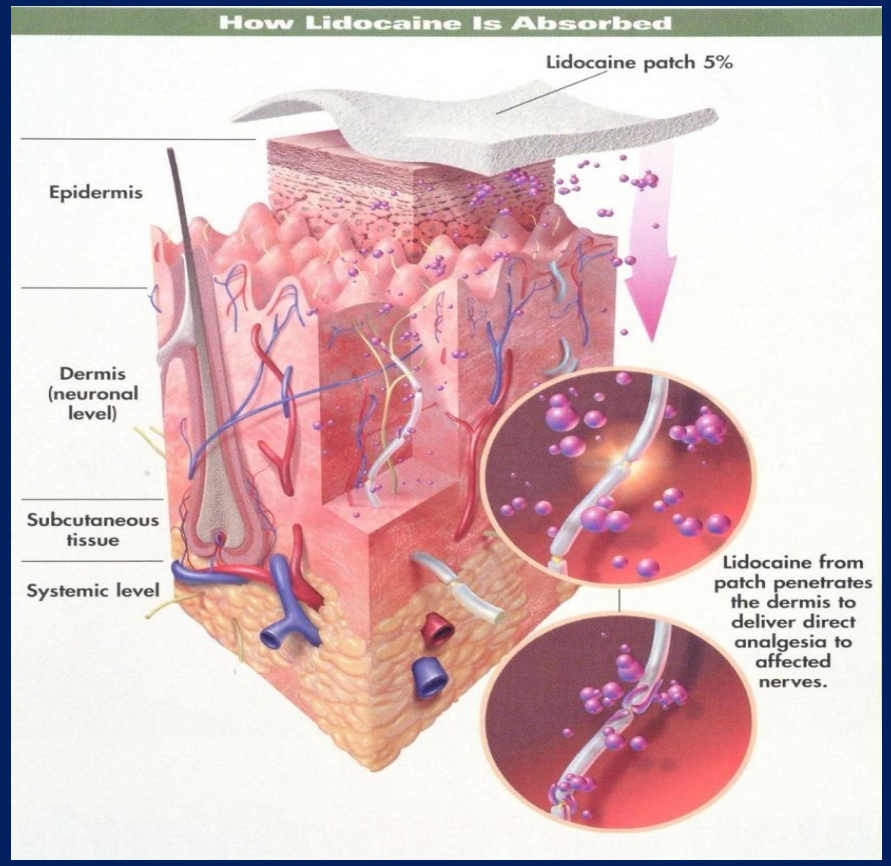
Postoperative pain

- Uncontrolled high intensity pain
- Longer duration of postop pain

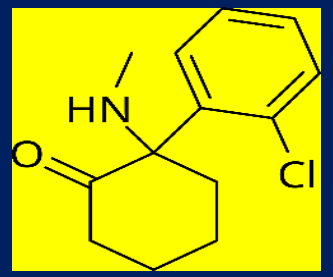
Voscopoulos C, Lema M. *Br J Anaesth*. 2010
Pozek JP, et al. *Med Clin North Am*. 2016

Local Anesthetics

Blocks conduction of nerve impulses by decreasing or preventing an increase in the permeability of excitable membranes to Na+. (Catterall & Mackie, 1996)



Ketamine for Acute Pain

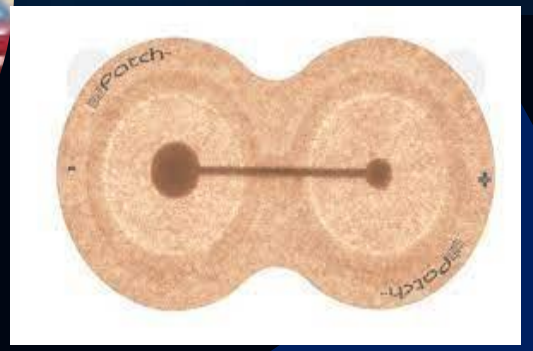


- Developed in the 1960s as a dissociative anesthetic
- Subanesthetic doses studied for treatment of perioperative pain, neuropathic and nociplastic pain, depression and substance use disorders
- Analgesic without respiratory depression
- Increased use (IV, IM, intranasal [off-label]) as analgesic in ED and perioperative settings
- Decreases opioid requirements (“opioid-sparing”)
- Low oral bioavailability and very limited evidence for use in chronic pain
- Dose-dependent adverse effects including hallucinations, agitation, anxiety, dysphoria, euphoria
- Misuse potential due to psychoactive effects

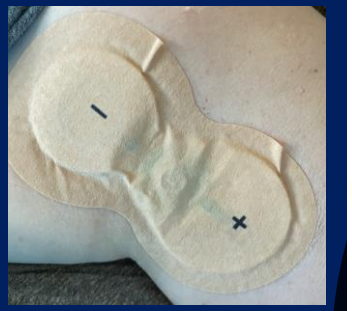
Bell RF, Kalso EA. *Pain Rep.* 2018
Schwenk ES et al. *Curr Pain Headache Rep.* 2021

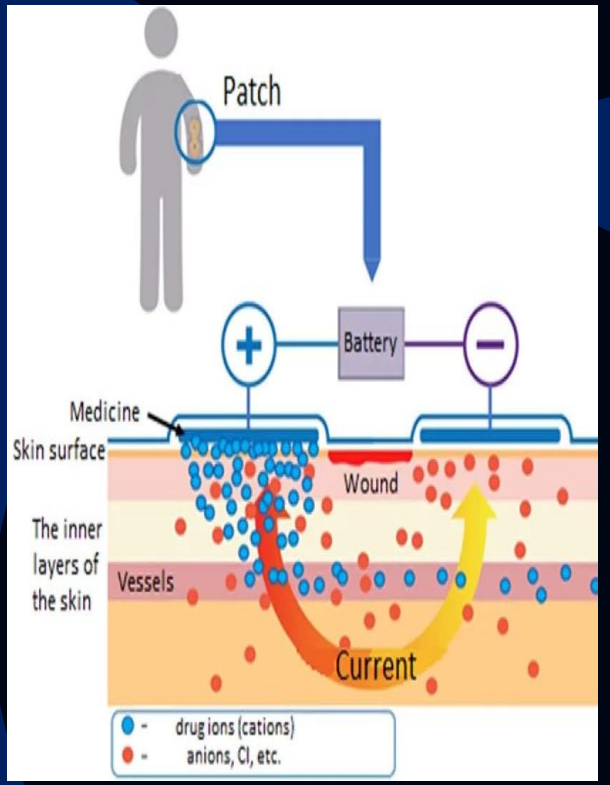
Acetaminophen

- Analgesic, antipyretic
- Well tolerated
- Used for both acute and chronic pain (Pros)
- Used to treat osteoarthritis
- Maximum dose 4000 mg/day, except w/ ETOH
- Inhibits prostaglandin synthetase in the CNS, weak peripheral anti-inflammatory activity, centrally acting, Reinforces the descending inhibitory serotonergic pain pathways (proposed)
- Risk of hepatotoxicity with higher doses, multiple combo products (Cons)
- Renal failure dosing based on creatinine clearance
- Moderately dialyzable
- Antidote – acetylcysteine (Mucomyst, Acetadote)



acetaminophen
NSAIDs
steroids





Buprenorphine

- Partial opioid agonist with formulations approved for treatment of pain or opioid use disorder (OUD)
- **Pain** (dosed in **mcg**)
  - Can precipitate opioid withdrawal if initiated while full opioid agonist highly bound
    - Taper prior opioid to ≤30 MME
    - Before starting buprenorphine

Buccal 75-900 mcg q12-24
- Film shouldn't be cut, chewed or swallowed

Transdermal 5-20 mcg/hr q 7 days
- Dosages (mcg/hr): 5, 7.5, 10, 15, 20 (max)
- Rotate sites wait min 3 wks before using same site

- **OUD** (dosed in **mg**)
  - Some formulations contain naloxone
  - Induction procedure to avoid precipitating opioid withdrawal
  - **OUD** dosed 1x/day
  - **OUD + Pain** dosed 3x/day

Sublingual tablets and film
Buccal tablets and film

Maintenance ~12-24 mg/d

SQ monthly injection

SCOPE of Pain, Boston University. Used with permission

Beer's Criteria

- Created in 1991 to improve safety of med therapy in older adults
- Potentially inappropriate medication
  - All classes of medications
  - Evidence-based, graded tool
  - Assists health care providers in improving medication safety in the geriatric patient
  - Covers side effects and potential adverse effects
    - TCAs: strong anticholinergics
    - NSAIDS: high rate of GIB in pts receiving for 3-6 months

Controversies

Marijuana in Michigan

Cannabis and Pain

Cannabis

- Contains >60 pharmacologically active cannabinoids including psychoactive THC and cannabidiol (CBD)
- Schedule I controlled substance (no currently accepted medical use)
  - Products with less than 0.3% THC are not considered a controlled substance

- Meta-analyses found moderate-quality evidence that cannabinoids can be effective for treatment of chronic pain, particularly neuropathic pain
  - **For 30% pain reduction** number needed to treat (NNT) was **24**[1] compared to **4-10 for TCAs, opioids, gabapentinoids, SNRIs**[2]

- "Very low certainty evidence from RCTs and observational studies are conflicting and leaves uncertainty whether the addition of medical cannabis affects the use of prescribed opioids among people living with chronic pain"[3]

1. Stockings E et al. *Pain* 2018
2. Noori A et al. *BMJ Open* 2021
3. Finnerup NB et al. *Pain* 2018

What about CBD oil?
No THC right???

“Unexpected Consequences” resulting from legalization of Recreational Marijuana

- Impaired driving
- New hire urine drug screen failure
- Does marijuana help trauma patients with their anxiety?
- Cyclic vomiting

Cannabis Hyperemesis

What is it?

- Cyclical pattern of hyperemesis every few weeks to months
- Months/years of cannabis use prior to onset and resolution with discontinuation
- Differential dx: Cyclical Vomiting Syndrome AKA Abdominal Migraine
- Distinguishing factor: symptoms relieved by hot bath or shower

Pathophysiology

- Hypothesis: chronic overstimulation of the endocannabinoid receptors leading to alteration in the body's intrinsic control of nausea and vomiting
- May be related to its action on the TRPV-1 receptors in the periphery
- Change in composition of the plant over last 30 years could contribute: higher THC and lower CBD

Cannabis Hyperemesis

Approximate time to diagnosis 1-2 years

Diagnostic Criteria: Rome IV Criteria

1. Criteria fulfilled for at minimum three months, with symptomatic onset occurring at least six months before diagnosis
2. Stereotypical episodic vomiting resembling cyclical vomiting syndrome in onset, duration, and frequency
3. Presentation after prolonged, excessive cannabis use
4. Relief of vomiting by a sustained cessation of cannabis use
5. May be associated with “pathologic” bathing behavior, e.g., prolonged hot baths and showers.

How to treat it?

- Cessation of marijuana
- Antiemetics not effective ie: ondansetron, prochlorperazine
- Topical capsaicin 1% to epigastric area TID (mostly case studies but includes pediatrics)

Analytical Cannabis
Extraction. Science. Testing.

US National Cancer Institute Announces It Will Fund Cannabis-Cancer Research

News

Published: May 16, 2022

- Psilocybin may ease depression in some hard-to-treat patients
- Modest effects waned over time

Colorado's ballot initiative

- Allow those 21 and older to use, grow, possess and share the psychedelic substances but not sell them for personal use
- Allow people who have been convicted of offenses involving the substances to have their criminal records sealed**se**
- Unlike Colorado, the state allows counties to opt out of the program if their constituents vote to do so

Advances

Genetic Polymorphism

UGT 1A1; involved in the glucuronidation of morphine, buprenorphine, and nalorphine.

UGT 1A3/1A4; glucuronidation of TCA.

UGT 2B7; glucuronidation of benzodiazepines.

- **Genetic polymorphism: population distribution for inheriting liver enzyme activity controlled by a single gene locus.**

CYP 2C19 approx. 18% Japanese and African Americans, 3-5% of whites, poor metabolizers with higher plasma conc. of drug substrates.

Ex. Diazepam, imipramine, and phenytoin.

CYP2D6 7-10% whites, 1-4% African Americans inherit autosomal recessive allele on chromosome 22 results in poor metabolism with higher plasma conc., prolonged half lives. Ex. Codeine-cannot convert codeine to morphine, paroxetine, venlafaxine, fluoxetine, desipramine, imipramine, nortriptyline and oxycodone.

(Core, 2002), (Cleary & Hogan, 2007)

*****FDA Drug Safety Communications**

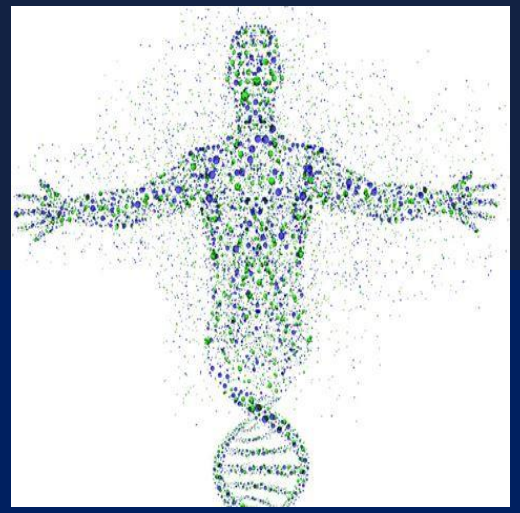
8/2012 Reviewing the safety of codeine administered post-tonsillectomy/adenoidectomy. 2/20/13 Black box warning issued. Deaths occurred in children ultra-rapid metabolizers with sleep apnea.

Equianalgesic Dosing
*Incomplete Cross Tolerance

Drug	Oral(mg)	IV (mg)	Duration (h)
morphine	30	10	3 - 4
hydromorphone	7.5	1.5	3 - 4
oxymorphone	10	1	> 4
methadone	2-5	2-5	6 – 8?
codeine	200	130	3 - 4
oxycodone	20-30	-	3 - 4
hydrocodone	30	-	3 - 4
meperidine	300	100	2 - 3

Exciting New Possibilities

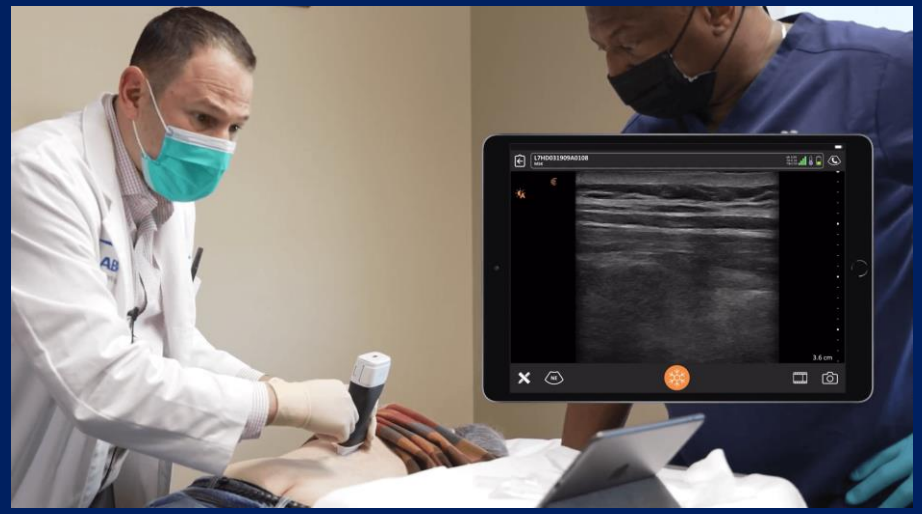
Genomic testing can help identify people with genetic variations so that doctors can make more informed prescribing decisions, reducing the risk of adverse events and increasing the likelihood of treatment success.



Collaboration

The combined efforts of physicians, universities, the National Institute of Health (NIH) and the FDA are encouraging insurance acceptance and reimbursement by leading with Medicare.

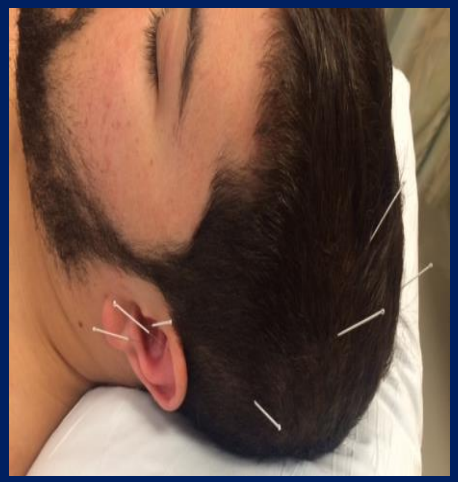
Despite an upfront cost, the realized savings is well worth the investment.



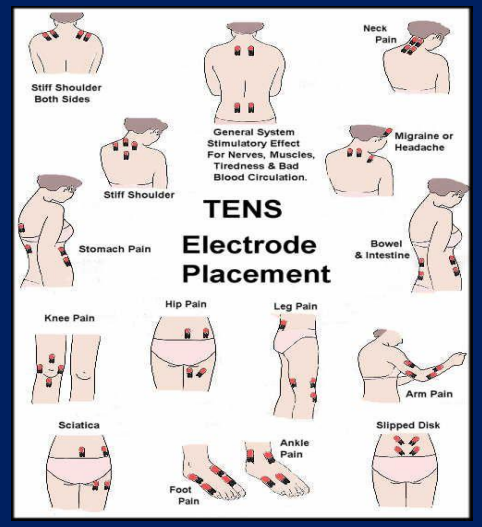
Ultrasound pain management device makes way for new FDA category

October 4, 2021
Lois Levine
The US Food and Drug Administration created a new category for ZetrOZ's Acoustic Medicine device.

Integrative Therapies



- *Ice/Heat*
- *Massage*
- *Distraction*
- *Music Therapy*
- *Positioning and Splinting*
- *Pet Therapy*
- *Hydo Therapy*
- *Aroma Therapy*
- *Acupuncture/Acupressure*
- *Yoga*
- *Transcutaneous Electrical Nerve Stimulation (TENS)*



Tricks of the Trade

- Establish a relationship with the pain patient!
- Accept the patient's report of pain
- Do not assume patient is drug seeking, remember the possibility of a genetic variation
- Listen intently; you would be surprised what the patient may tell you
- Relay the need for accurate information regarding what the patient is taking for pain at home
- Discuss with patient how important it is to you that they communicate to you if their pain is being ineffectively managed
- Establish small goals; all about function

Caring Behaviors in Pain Management

- Establishing a caring trusting relationship in pain management:

Opportunity to meet family members
One of the most vulnerable times
Desperately seeking help and hope!
The feeling of being totally alone, isolated!
Empathy
You have the ability to change someone's life EVERYDAY!