Opioid Dangers, Complications and Comorbidity Factors

November 17, 2021

Presented by:
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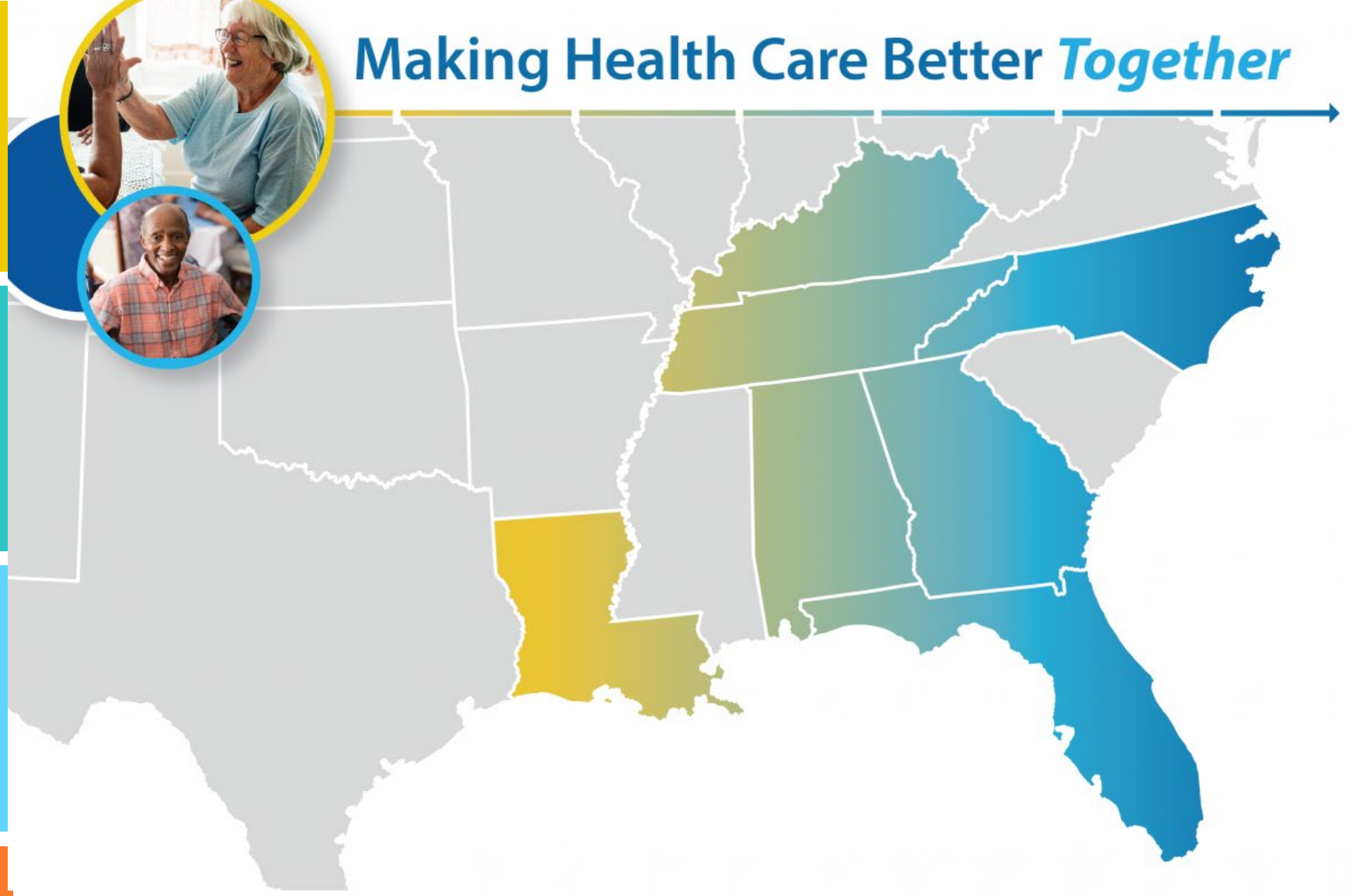

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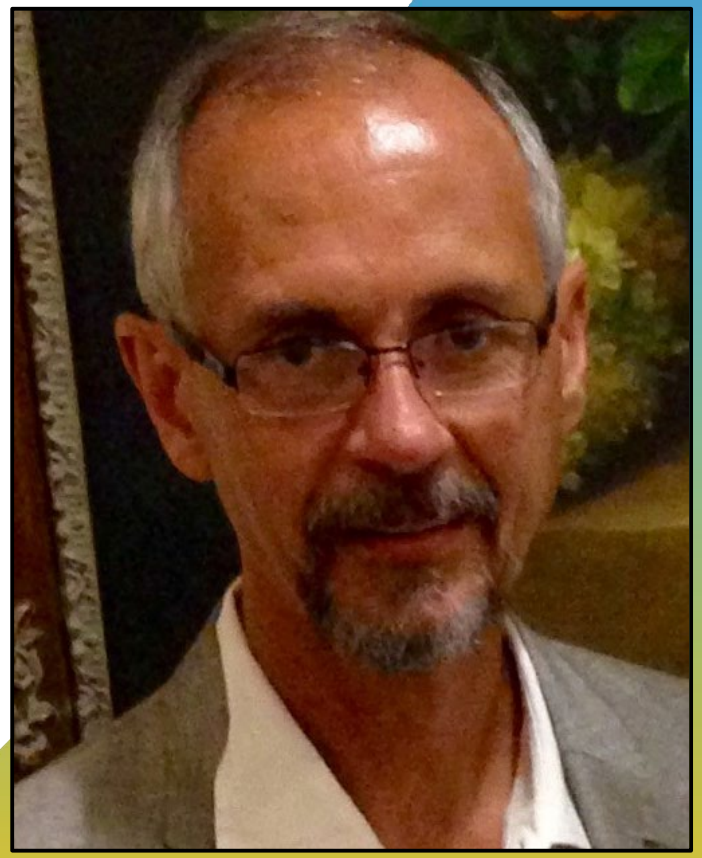


Opioid Response Network
STR-TA

Working With Communities to Address the Opioid Crisis

- SAMHSA's State Targeted Response Technical Assistance (STR-TA) grant created the Opioid Response Network to assist STR grantees, individuals and other organizations by providing the resources and technical assistance they need locally to address the opioid crisis.

- Technical assistance is available to support the evidence-based prevention, treatment and recovery of opioid use disorders.

Funding for this initiative was made possible (in part) by grant no. 6H79TI080816 from SAMHSA. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

Working With Communities to Address the Opioid Crisis

- The Opioid Response Network (ORN) provides local, experienced consultants in prevention, treatment and recovery to communities and organizations to help address this opioid crisis.
- The ORN accepts requests for education and training.
- Each state/territory has a designated team, led by a regional Technology Transfer Specialist (TTS), who is an expert in implementing evidence-based practices.

Contact the Opioid Response Network

To ask questions or submit a request for technical assistance:

Visit: www.OpioidResponseNetwork.org
Email: orn@aaap.org
Call: 401-270-5900

Objectives

Participants will:

1. Learn about the dangers associated with opioid misuse.
2. Understand the relationship between mental health disorders and opioid misuse.
3. Learn how physical disorders, mental health disorders and substance use disorders interact and increase the likelihood of opioid misuse.

Common Scenario

- A patient presents to the MER with an ankle injury and has a fracture.
- Orthopedics places a cast, provides a two-week follow-up appointment and prescribes a one-week supply of OxyContin for pain.
- Does this seem like an appropriate course of action?”

Opioids

- Examples:
  - Morphine, OxyContin, Percocet
  - Heroin
  - Methadone
- Painkillers
- Euphoria, disconnection, sedation
- Negative effects
  - Nausea, constipation, itching
  - Excessive drowsiness
  - Slow breathing

Drug Interactions

- Different mechanisms
  1. Mainly through additional CNS depression or
  2. interference with opioid metabolism/excretion
- Opioids metabolized through CYP 450 (3A, 2D6)
  - **Codeine, hydrocodone, oxycodone, methadone (2B6), tramadol, fentanyl**
  - Must re-evaluate if concomitant CYP inhibitor/inducer
- Few opioids have serotonergic properties = drug interactions with other serotonergic drugs
  - Tramadol, meperidine, methadone, fentanyl?

CNS Drug Interactions

Drug group	Interaction with Opioids
Sedative-hypnotics	↑ CNS depression - particularly respiratory depression **- Benzodiazepines (FDA BBW), alcohol, muscle relaxants**
Antipsychotic tranquilizers	- ↑ sedation - Variable effects on respiratory depression - Accentuation of cardiovascular effects (anti-muscarinic and α-blocking actions)
MAO inhibitors	-Contraindication to all opioid analgesics because of high incidence of hyperpyrexia coma (specially when used with meperidine) -Hypertension

Adverse Effects

Respiratory depression

- Due to direct inhibition of the respiratory center in the brainstem.
  - Also due to decreased sensitivity of the respiratory center to CO_2, decreased respiratory rate, minute volume and tidal exchange.

Hypotension

- Opioids inhibit the vasomotor center in the brainstem.
  - Cause peripheral vasodilation
  - Inhibit compensatory baroreceptor reflexes
  - Increase histamine release -> flushing, itching
  - Use cautiously in patients in shock or with reduced blood volume
    - Elderly susceptible

Constipation

- Due to:
  - ↑ tone with decreased coordinated GI motility
  - ↑ anal sphincter tone
  - Inattention to the defecation reflex

Nausea and vomiting

- Direct stimulation of the chemoreceptor trigger zone in the area postrema of the medulla (leads to activation of vomiting center).
- The effect blocked by dopamine receptor antagonists.
  - effect is self limiting due to subsequent direct inhibition by morphine on the vomiting center

Adverse Effects

Sedation

- Higher risks for accidents
- Dysphoria may develop

Pruritus/Urticaria

- Flushing and warming of the skin, sometimes accompanied by sweating, itching
- Due to peripheral histamine release & central action on proprioceptive neural circuits

Urine retention

- Common in elderly due to decreased plasma flow
- Increased tone with decreased contractility of ureters and bladder
- Increased urethral sphincter tone
- Inattention to urinary reflex
- Used cautiously in patients with prostatic hypertrophy

CYP Drug Interactions

Main CYP Inhibitors	Main CYP Inducers
Erythromycin, clarithromycin	Phenytoin
“Azole” antifungals	Phenobarbital
Valproic acid	Carbamezapine
Cimetidine	Rifampin
Verapamil, diltiazem	St. John’s Wort
Grapefruit juice	Griseofulvin
Isoniazid	Smoking

- **Clarithromycin + oxycodone** = increased analgesic/euphoric effects, increased potential toxicity and overdose; Consider dose decrease of oxy
- **Rifampin + oxycodone** = decreased analgesic effect/withdrawal. Consider dose increase of oxy
- Acute vs chronic administration?

Opioid-Induced Hyperalgesia

- Paradoxical effect
- Patient variability
- Experimental and clinical studies have shown that morphine admin at very low doses decreases pain threshold, inducing hyperalgesia by activating pronociceptive systems.
  - ➢ leading to pain hypersensitivity and short-term tolerance
- Persistent admin of opioid analgesics can increase the sensation of pain.

Unique Characteristics of Opioids

- Serotonin Syndrome
  - Tramadol
  - Meperidine
  - Methadone
  - Fentanyl
- How are opioids contributing to the problem?
  - Above opioids have a secondary mechanism of action in which they **block reuptake of serotonin and norepinephrine.**
  - This causes and increase of serotonin in the neuronal synapse = overstimulation of serotonin

Opioids and Serotonin Syndrome

- What does this present like in outpatient setting?
  - Flu? Common cold?
- Send home with flu-like symptoms
  - Give amox/z-pack and steroids?
  - D/C the most likely serotonergic drug (SSRI, SNRI, trazodone)?
    - Feasible?
  - Is there still potential to cause SS with tramadol on board?
  - Change causative opioid?
  - Decrease the dose of opioid?

SS Symptoms

- Characterized by a triad of symptoms:
  - **Altered mental status, neuromuscular hyperactivity and autonomic instability or hyperactivity**
- Commonly develops after either an increase in the dose of a serotonergic drug or the addition of another serotonergic medication.
  - Typically develop within two hours (67% of pts present with symptoms within six hours of increased dose or new med).
  - Variable time to presentation
- Nonspecific symptoms (mild)
  - Confusion, agitation, tachycardia, fever, HA/migraine, diarrhea (looks like the flu?)
- More specific SS symptoms (moderate to severe)
  - Myoclonus (muscle jerking), muscle rigidity, tremor, HTN, dilated pupils, hyperthermia, sweating, seizure, coma

SS Treatment

- **D/C the offending drug(s)** and **provide supportive care**
  - Usually the last drug that was prescribed
- Many mild to moderate cases are self-limiting and usually resolve within one to three days.
- Serotonin Antagonist for moderate to severe - admit
  - **Cyproheptadine 4 mg orally**
- Muscle spasms
  - Benzodiazepine (diazepam 5 mg IV)
- Seizure
  - Benzodiazepine
- Antipyretic usually not recommended due to the fever originating from excessive muscular activity

Opioid Overdose

- Physical signs
  - Impaired attention
  - Memory impairment
  - Slurred speech
  - Small pupils of eyes
  - Decreased heart rate
  - Slow breathing
  - Drowsiness/coma

- Psychiatric signs
  - Initial euphoria
  - Agitation
  - Impaired judgment

Why Do People Use Drugs?

Key Motivators & Conditioning Factors

- Psychiatric disorders
- Forget (stress/pain amelioration)
- Functional (purposeful)
- Fun (pleasure)
- Social/educational disadvantages

Also, initiation starts through:

- Experimental use
- Peer pressure

Self-Medication

- Use of mood-altering substance is to ameliorate underlying negative psychiatric symptoms.
  - ➢ Stimulants for depression
  - ➢ Alcohol or heroin for anxiety

Reward System Basics

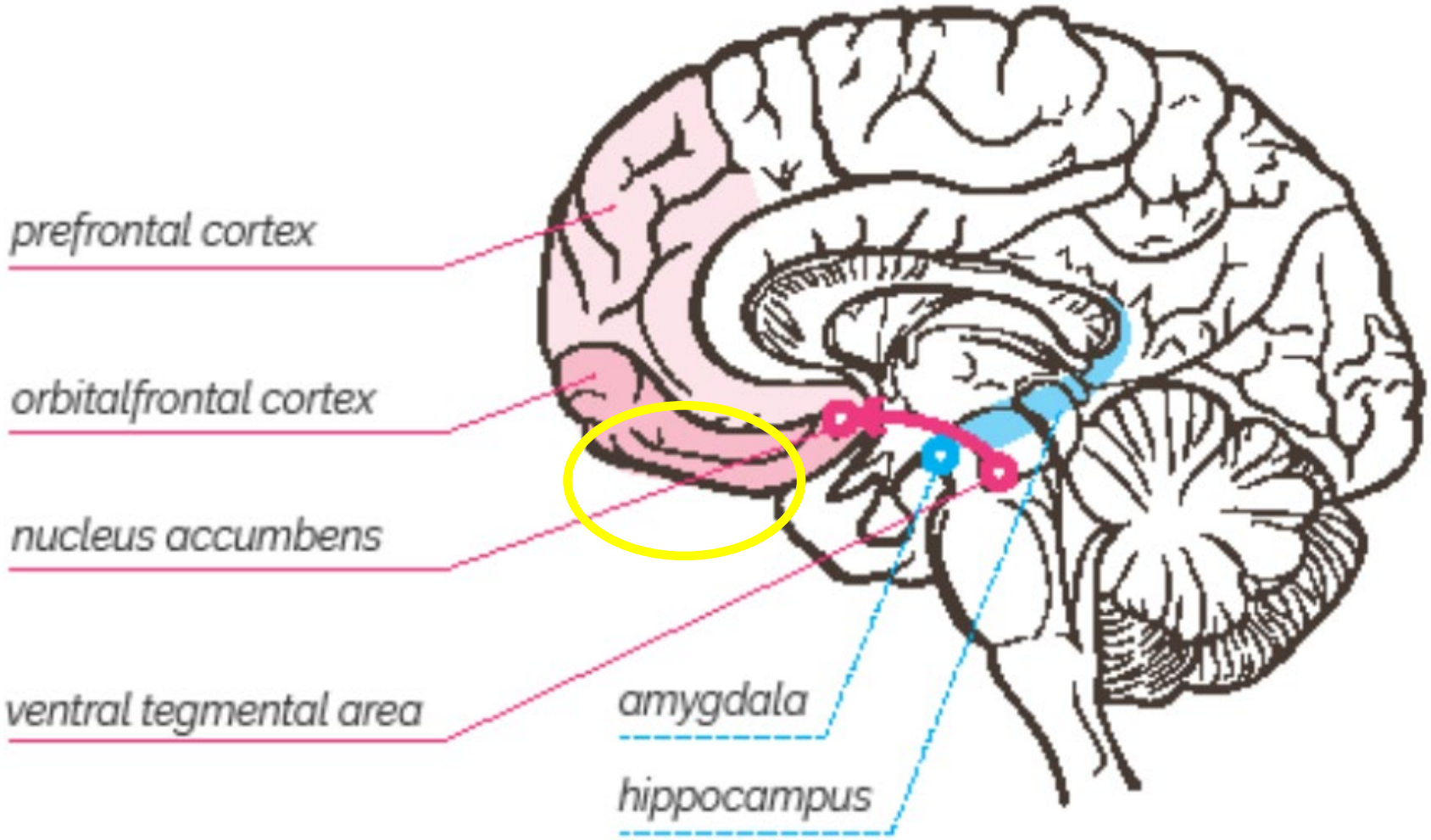


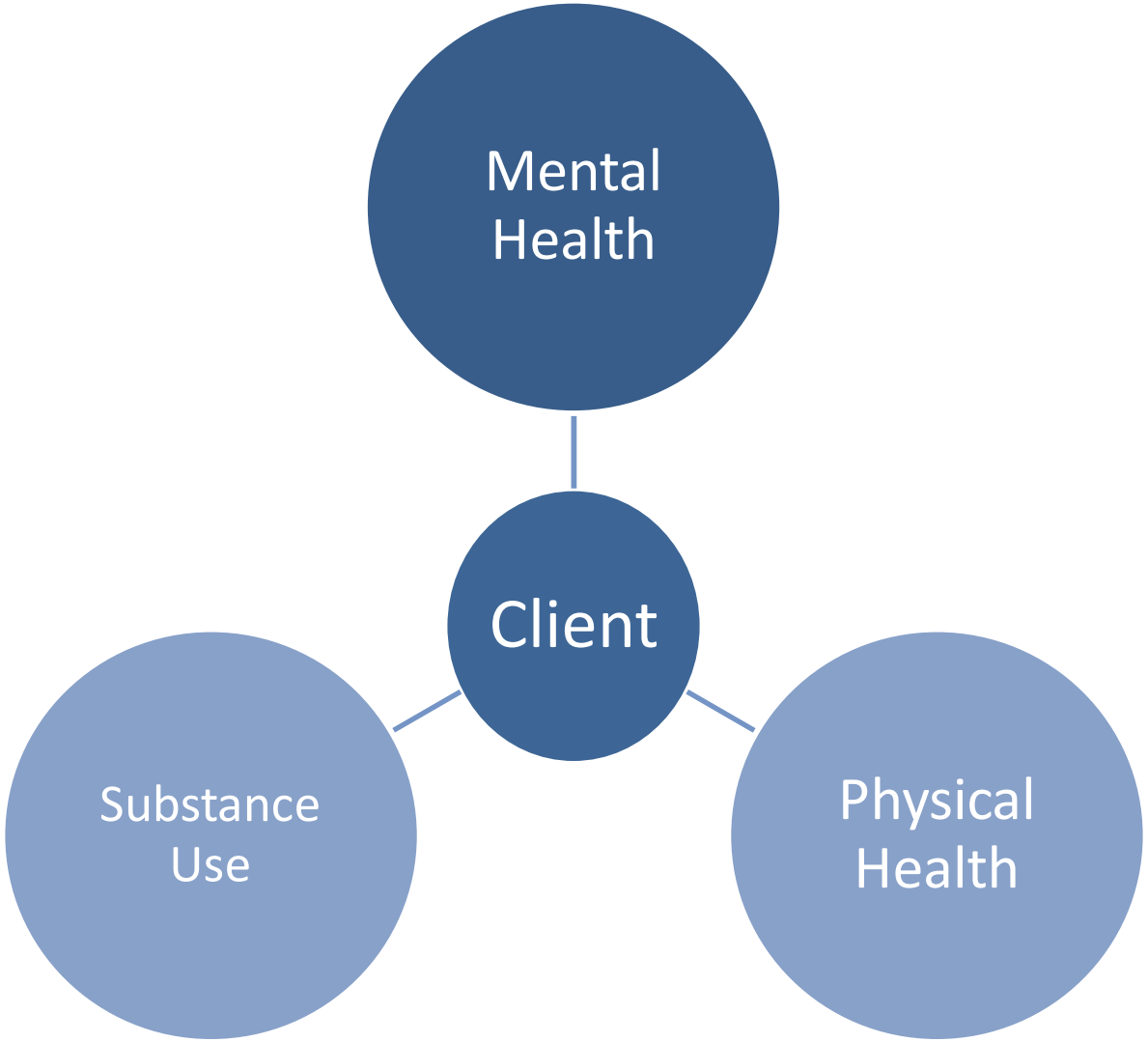
Image from Fuehrlein and Ross, Biological Psychiatry

Psychiatric Co-Morbidity

- Higher risk for substance use among those with psychiatric disorders
  - Depression or anxiety disorders
  - Schizophrenia, bipolar disorder
  - Personality disorders
- Screening is not universal

- May present with complex clinical histories and symptoms
  - Diagnosis challenging
  - Intoxication and withdrawal symptoms may be mistaken for other psychiatric or medical symptoms
- Cognitive-behavioral counseling more challenging

Redefining Co-Occurring Disorders



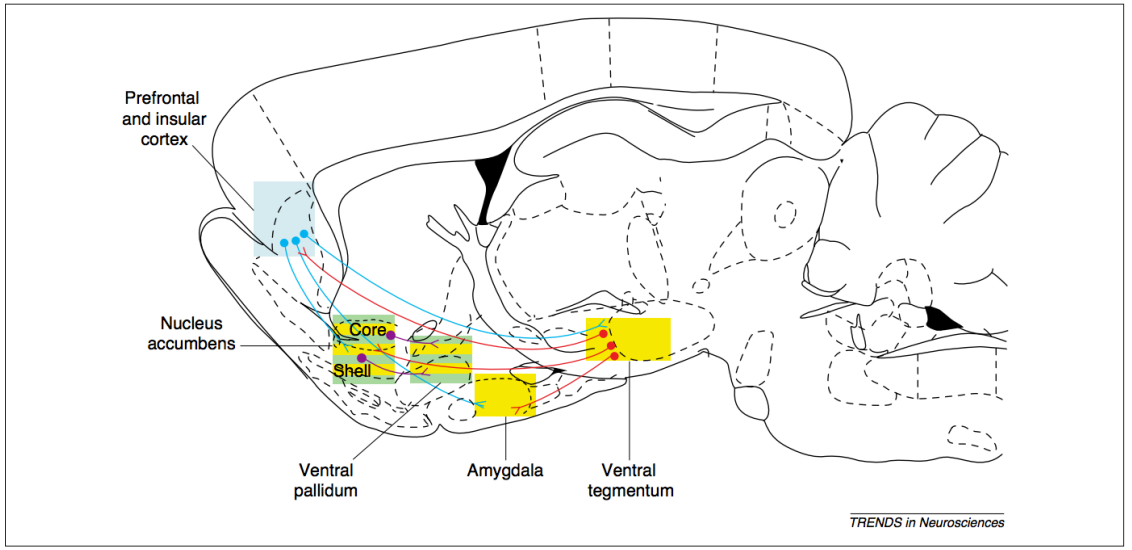
Opioids May Have a Special Role in "Liking"

Liking: The positive hedonic impact (pleasure) experienced during consumption of a reward (consummatory).

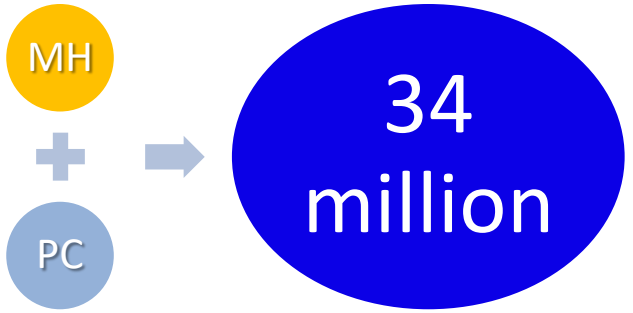
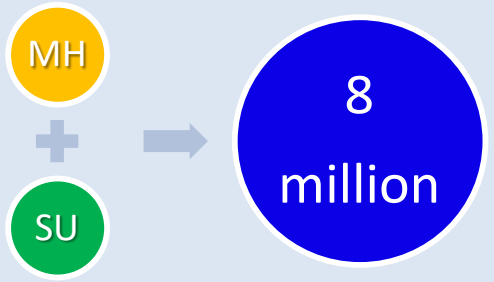
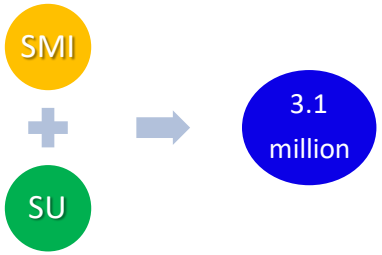
- Opioid system
- Ventral pallidum, nucleus accumbens
- Insula, orbitofrontal cortex

Wanting: the incentive motivational drive that underlies seeking of a reward (approach)

- **Dopamine system**
- Amygdala, nucleus accumbens, ventral pallidum

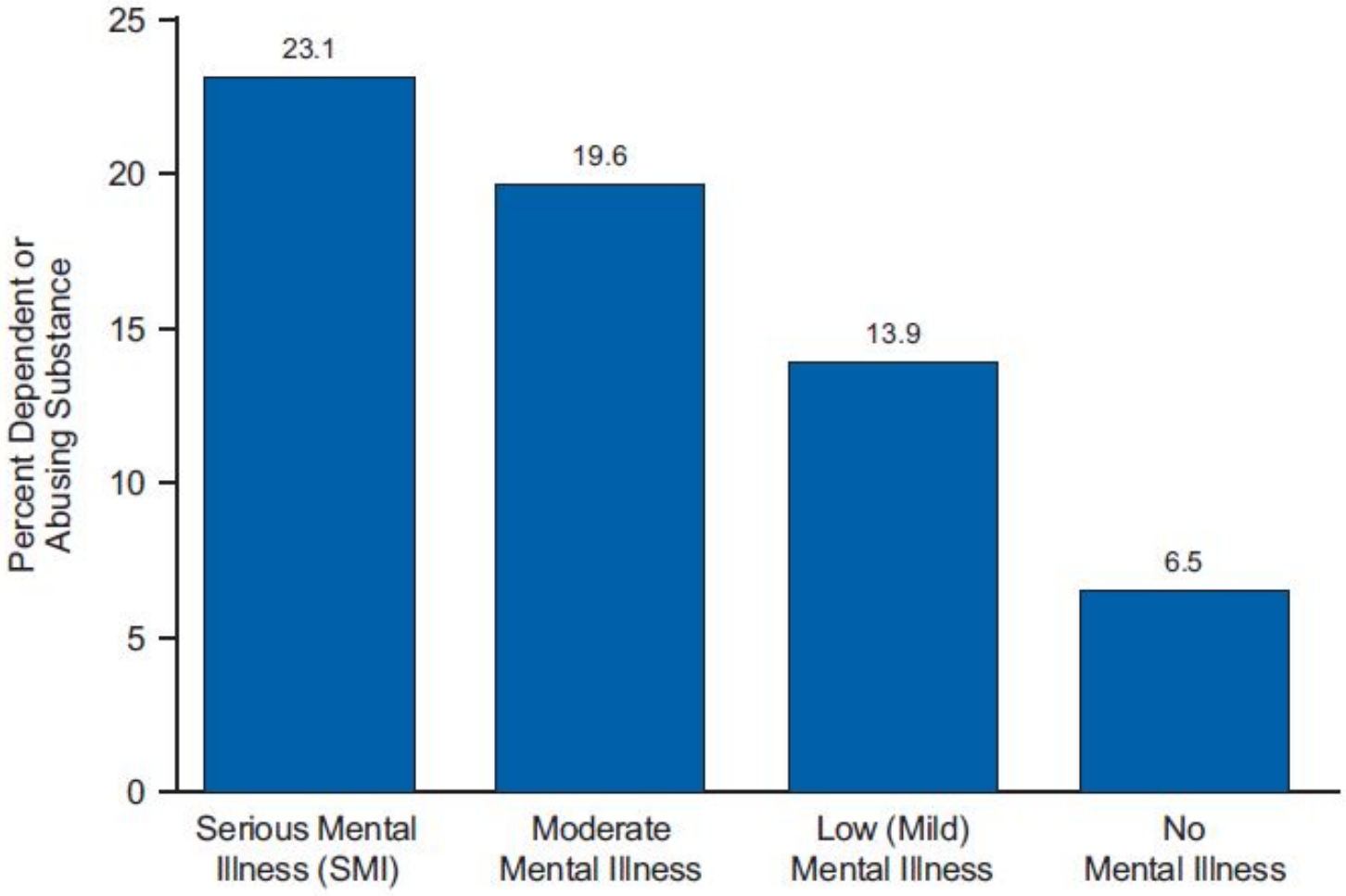


Co-Occurring Disorders Are Common

➢ 34 million American adults had both a mental and physical health disorder in past 12-months.[1].	
➢ In 2013, over 8 million people had both a mental health and SUD.[2] (ages 12+).	
➢ In 2017, about 3.1 million people had serious mental illness and SUD.[2] (ages 18+).	

1 Druss, B.G., and Walker, E.R. (2011).
2 SAMHSA (2018)

Past Year Substance Use and Severity of Mental Illness



SAMHSA, NSDUH 2013

COD Prevalence

PTSD

Nearly 90% of women participating in substance abuse treatment report lifetime exposure to trauma. (Reynolds et al., 2011)

From 30% to 60% of these women present with current co-occurring PTSD and substance use disorders. (Morgan-Lopez et al., 2013)

There is a strong association between childhood experiences of trauma and adult psychopathology. (Blanco et al., 2013)

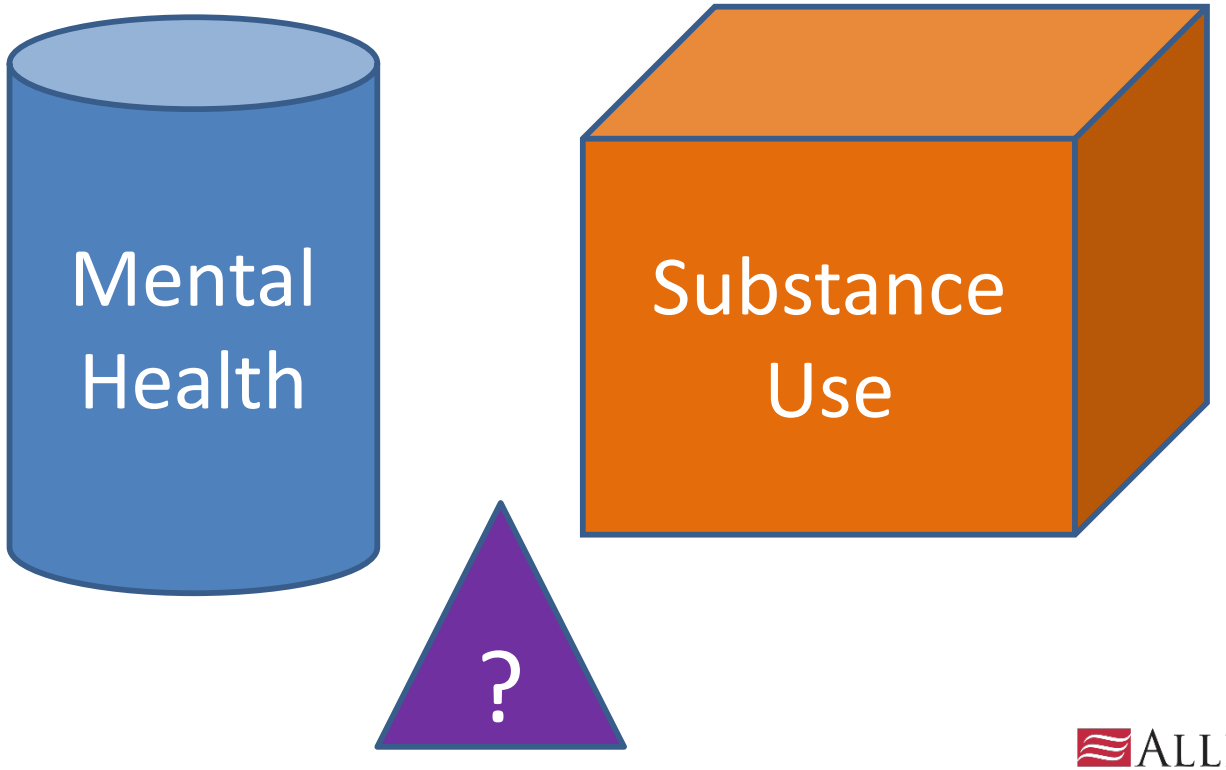
The Challenge of CODs

- Common disease treatments can make comorbid MH or medical problems **worse.**
  - Antipsychotics & other psych meds can lead to weight gain, type 2 diabetes and cardiovascular diseases.
  - Some meds for medical conditions have psych side effects or exacerbate MH symptoms.
    - e.g., diuretics can cause anxiety and depressive symptoms
- MH/SU symptoms can affect physical health.
  - Paranoia can reduce usage of services.
  - Disorganized thinking makes following medical treatments difficult.
  - Impairs self-care.

Druss, B.G., and Walker, E.R. (February 2011).

How Do We Conceptualize the Development of COD?

Three primary pathways in development of COD have been suggested:



Shared Risk Factors Involved

- Both substance use disorders and other mental illnesses are caused by overlapping factors:
  - Underlying brain deficits
  - Genetic vulnerabilities
  - Environmental triggers
  - Early exposure to stress or trauma
  - Drug use disorders and other mental illnesses are developmental disorders

NIDA, 2011

Red Flags for Opioid Use Disorder

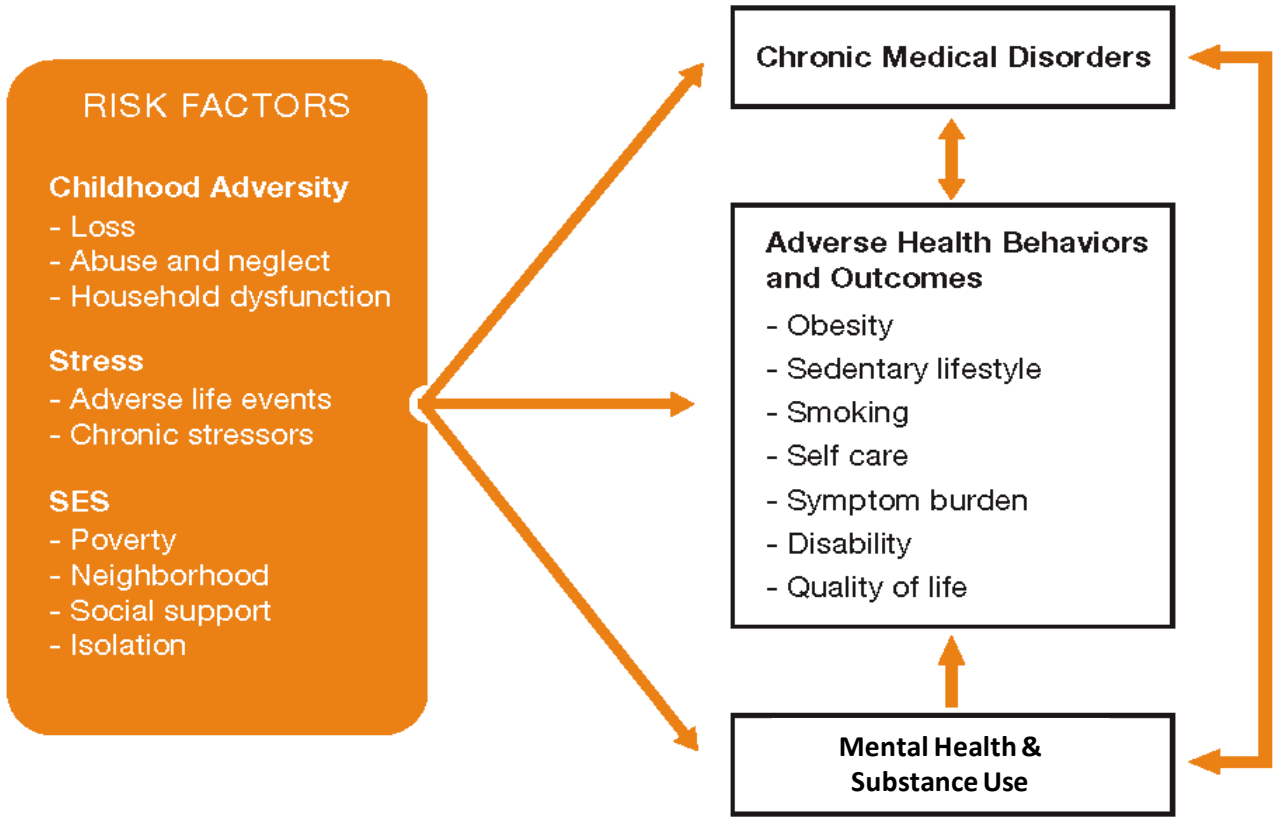
- Behaviors
  - Angry/hostile/threatening
  - Preoccupied with specific medication and dose, unwilling to try alternatives or allergic to all others
  - Reports subjective euphoria with opioids

- Objective findings
  - Ran out of prescription early
  - Has visited other doctors/ERs
  - Pain out of proportion to exam findings

- Assessments
  - Screening tools are effective for assessing and monitoring for opioid use disorder in an objective way but do not confirm an opioid use disorder.

Mental Health, Substance Use, and Physical Health are Interconnected

Figure 3: Model of the interaction between mental disorders and medical illness



Source: Modified from Katon (80)

Druss, B.G., and Walker, E.R. (February 2011).

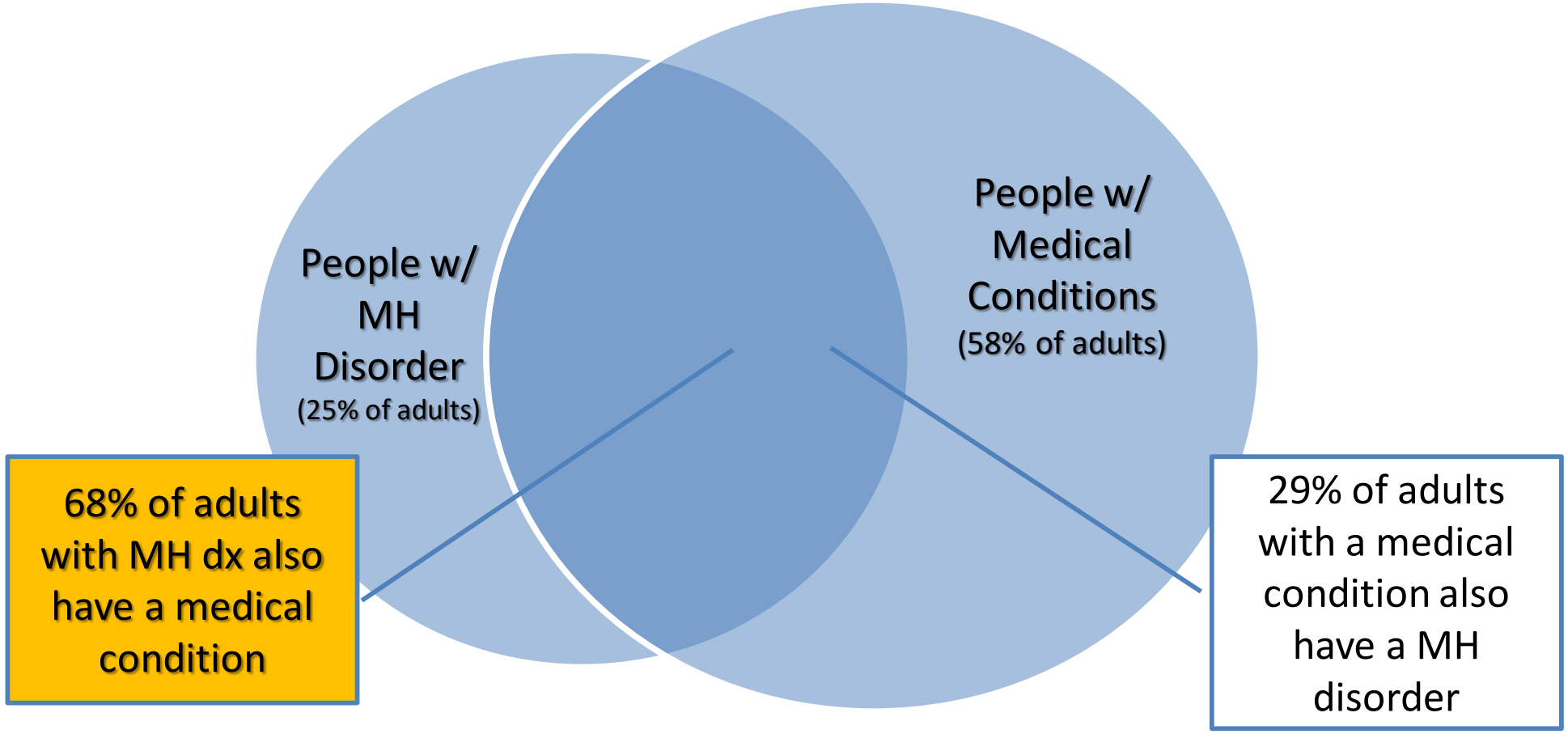
Conceptualization

- So where does of this leave us?

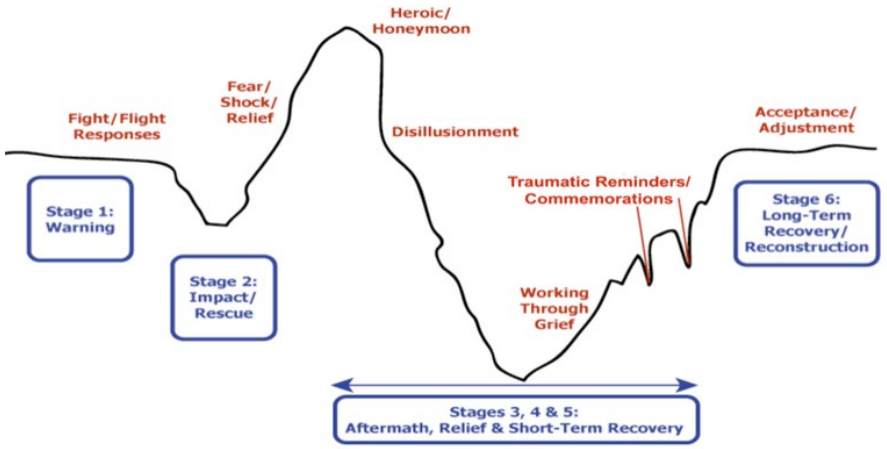
- **Regardless of how they develop, substance use disorders and other mood or anxiety disorders become "functionally intertwined" in the maintenance of the co-occurring disorders such that each perpetuates the other.**

- What are the treatment implications of this?

Most People with a Mental Health Disorder Also Have a Medical Condition

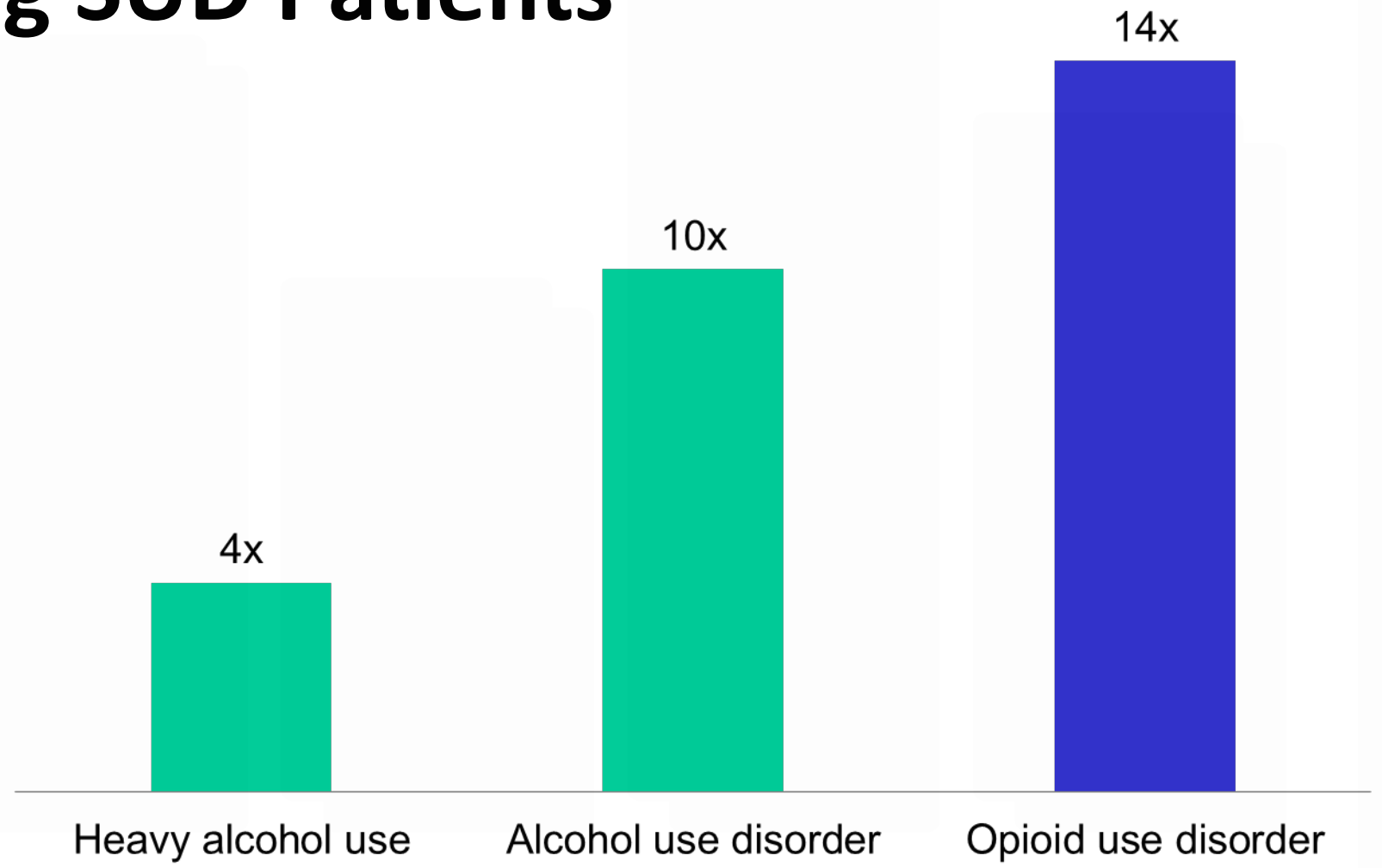


Time Course of PTSD



- Symptoms of PTSD usually appear within one week of trauma.
- Worsen over three months, then may decrease over a year.
- 50% of patients with symptoms at one year will continue to have symptoms after five years.

Risk of Completed Suicide Higher Among SUD Patients



Harris and Barraclough 1997; Wilcox 2004

Denial

- Substance use disorders often viewed as “cunning and baffling.”
- The reward system looks for ways to convince the cortex to continue use.
- Denial is a defense mechanism; it defends the substance use disorder and helps it to continue.
- There is little motivation to change when the behavior is not believed to be a problem, hence the substance use disorder is protected.

Promises

- Promises help the patient to continue their disorder by denying a need for treatment or other interventions.
- As with denial, this is usually not the patient “lying” but a symptom of the disease process, which the patient truly believes.
- Broken promises destroy relationships and families and make it very difficult to regain trust.

Excuses

- Excuses to relapse are triggers for the patient, but perceived as excuses to others.
- Sometimes triggers are negative (stressful event, rainy day), other times they are positive (happy events, sunny day).
- Patients with a substance use disorders often create excuses to enable the disorder to continue.
- At times, the excuse is legitimate, i.e., spouse tragically dies and patient relapses after five years of sobriety.

Choice

Think about someone with an alcohol use disorder slowly and methodically destroying everything that was ever important.

Risk Factors

- Personal history of a substance use disorder
- Family history of a substance use disorder
- History of mental illness
- History of trauma

CASAColumbia. (2012). Addiction medicine: Closing the gap between science and practice.

High Risk Behaviors

- Previously resuscitated with Narcan
- IV use
- Mixing with benzos/alcohol

References

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University of California, Los Angeles' Integrated Substance Abuse Programs. (2016). *Cognitive-behavioral therapy and relapse prevention strategies* [PowerPoint slides]. Retrieved from http://www.uclaisap.org/.

Weaver, M. (nd). *Mental illness and substance abuse comorbidities* [PowerPoint slides]. Retrieved from the Opioid Response Network Repository.

Questions?

CMS 12th SOW Goals

Behavioral Health Outcomes & Opioid Misuse

- ✓ Promote opioid best practices
- ✓ Decrease high dose opioid prescribing and opioid adverse events in all settings
- ✓ Increase access to behavioral health services

Patient Safety

- ✓ Reduce risky medication combinations
- ✓ Reduce adverse drug events
- ✓ Reduce C. diff in all settings

Chronic Disease Self-Management

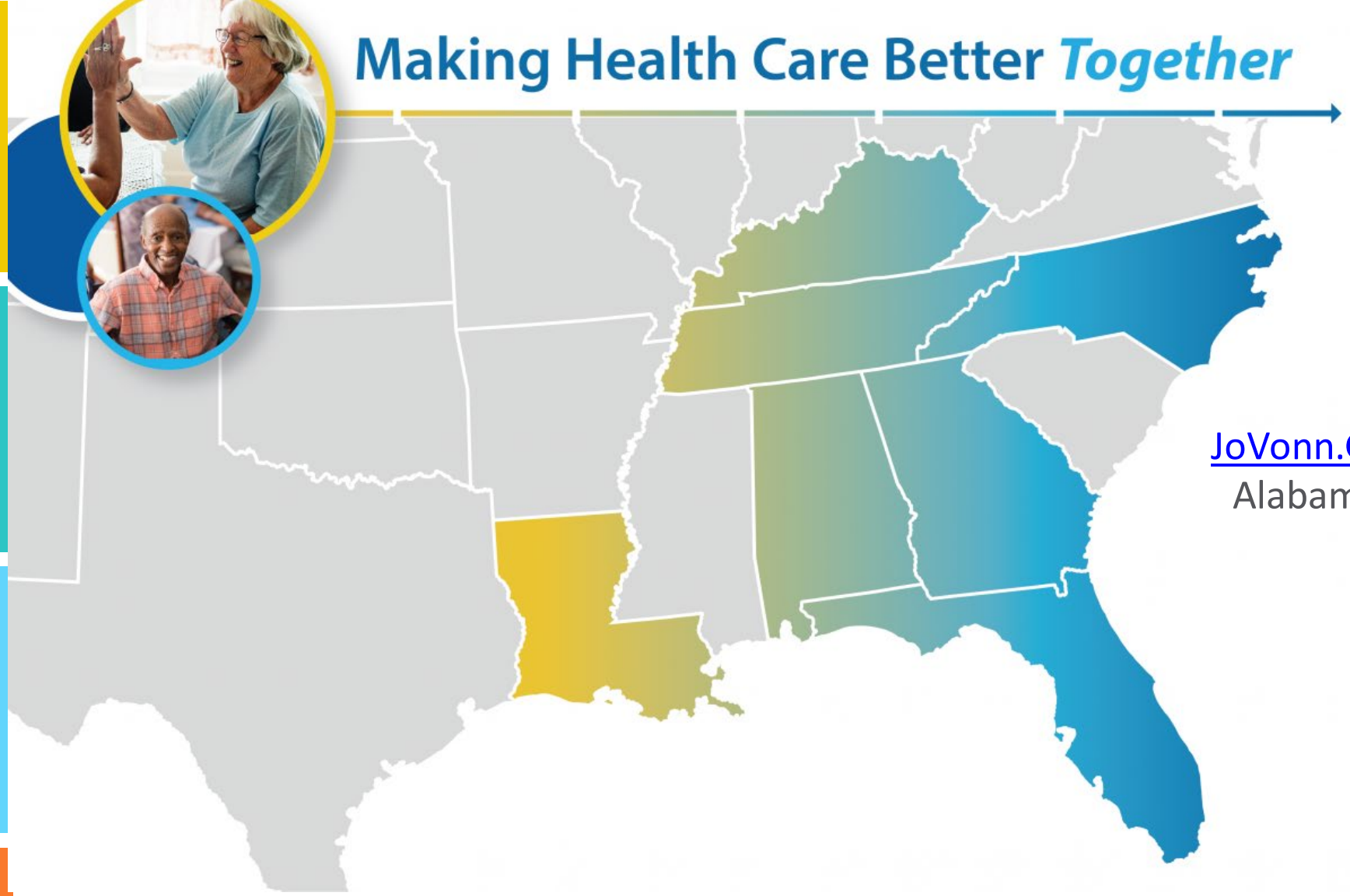
- ✓ Increase performance on ABCS clinical quality measures (i.e., aspirin use, blood pressure control, cholesterol management, cardiac rehab)
- ✓ Identify patients at high-risk for developing kidney disease & improve outcomes
- ✓ Identify patients at high risk for diabetes-related complications & improve outcomes

Quality of Care Transitions

- ✓ Convene community coalitions
- ✓ Identify and promote optical care for super utilizers
- ✓ Reduce community-based adverse drug events

Nursing Home Quality

- ✓ Improve the mean total quality score
- ✓ Develop national baselines for healthcare related infections in nursing homes
- ✓ Reduce emergency department visits and readmissions of short stay residents



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Publication No. 12SOW-AHS TO1-NH TO1-CC--1096-11/08/21

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