

Making a Transformation (MAT) Conference 2024

Keynote #2: The Science of Substance Use Disorder & The Implications for Treatment

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Disclosures

None of the presenters, planners, or others in control of content for this educational activity have relevant financial relationships to disclose with ineligible companies whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.

Learning Objectives

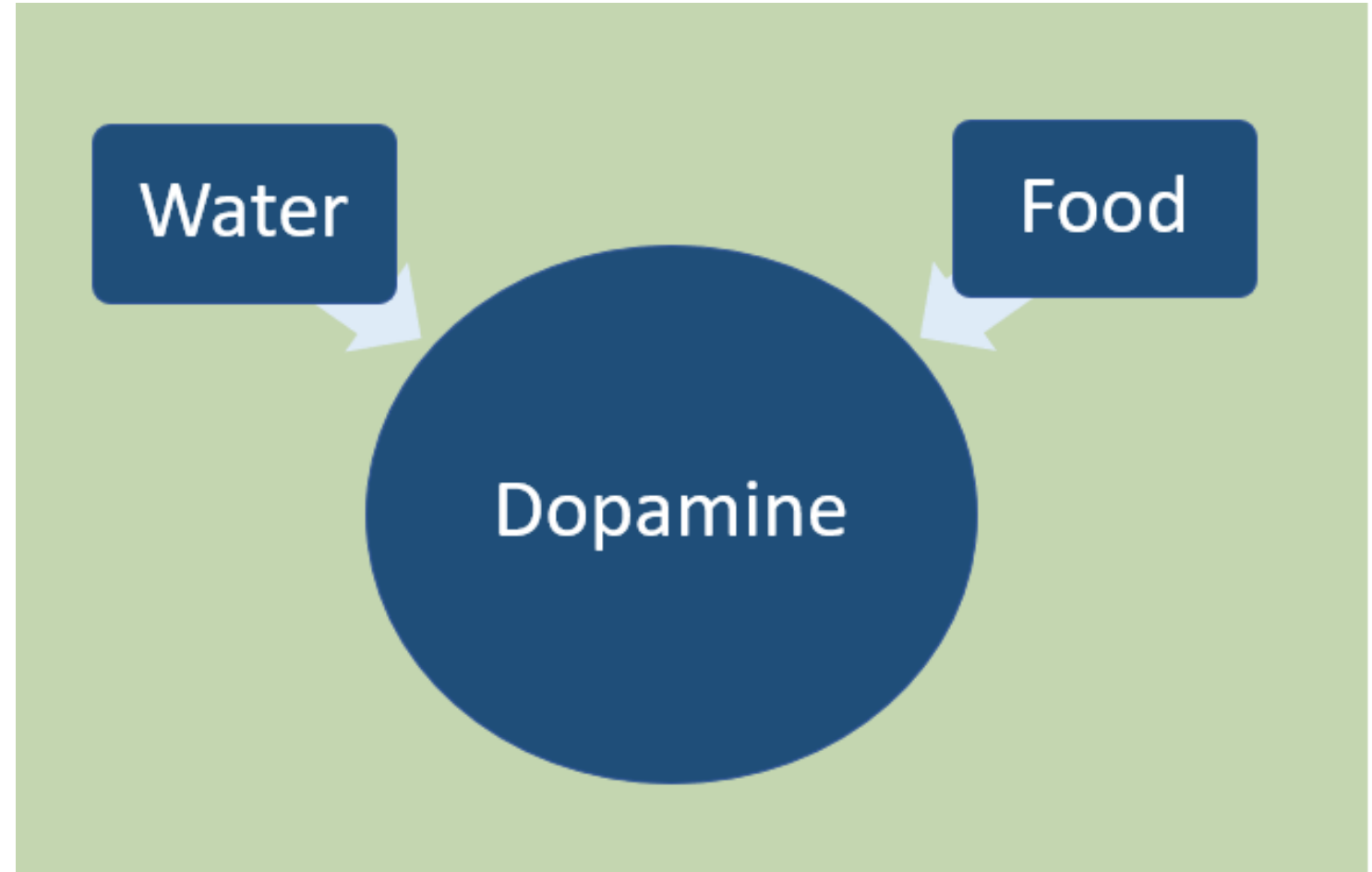
1. State 1 way brain changes with repeated exposure to addictive substances.
2. Report 1 way substance use disorders are like other chronic diseases.
3. Relate 1 way science can be used to address a common misconception.
4. Identify at least one population that has historically had decreased access to medication for addiction treatment and the science that can be used to address this inequity.

Substance Use Disorders are Disorders of the Brain



Dopamine

Dopamine: Often referred to as the "feel good" chemical contributing to feelings of pleasure and motivation

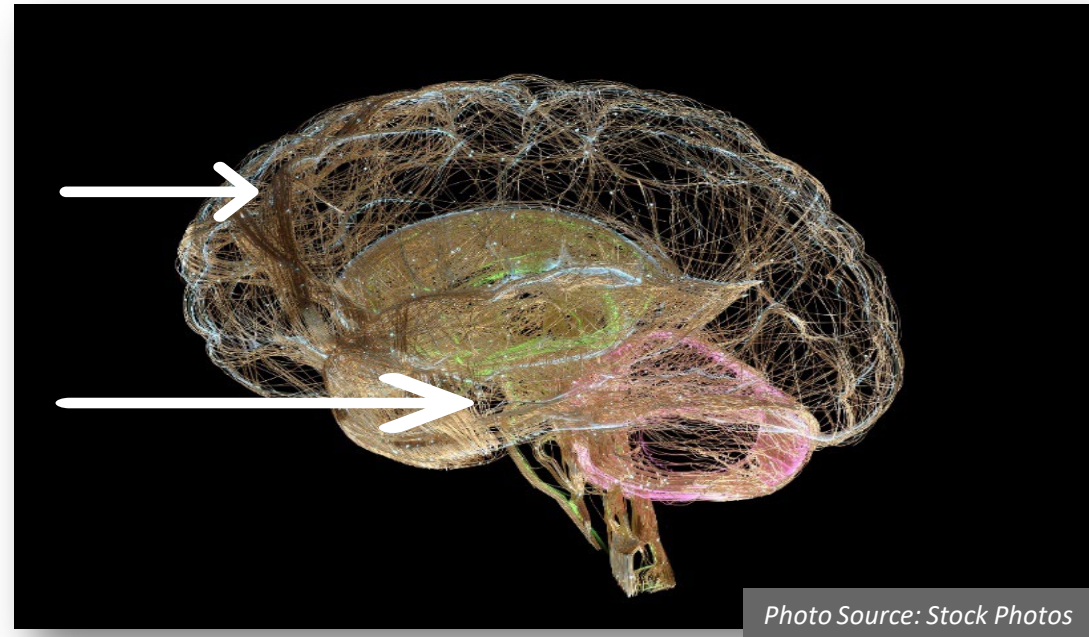


How Addictive Substances Affect the Brain

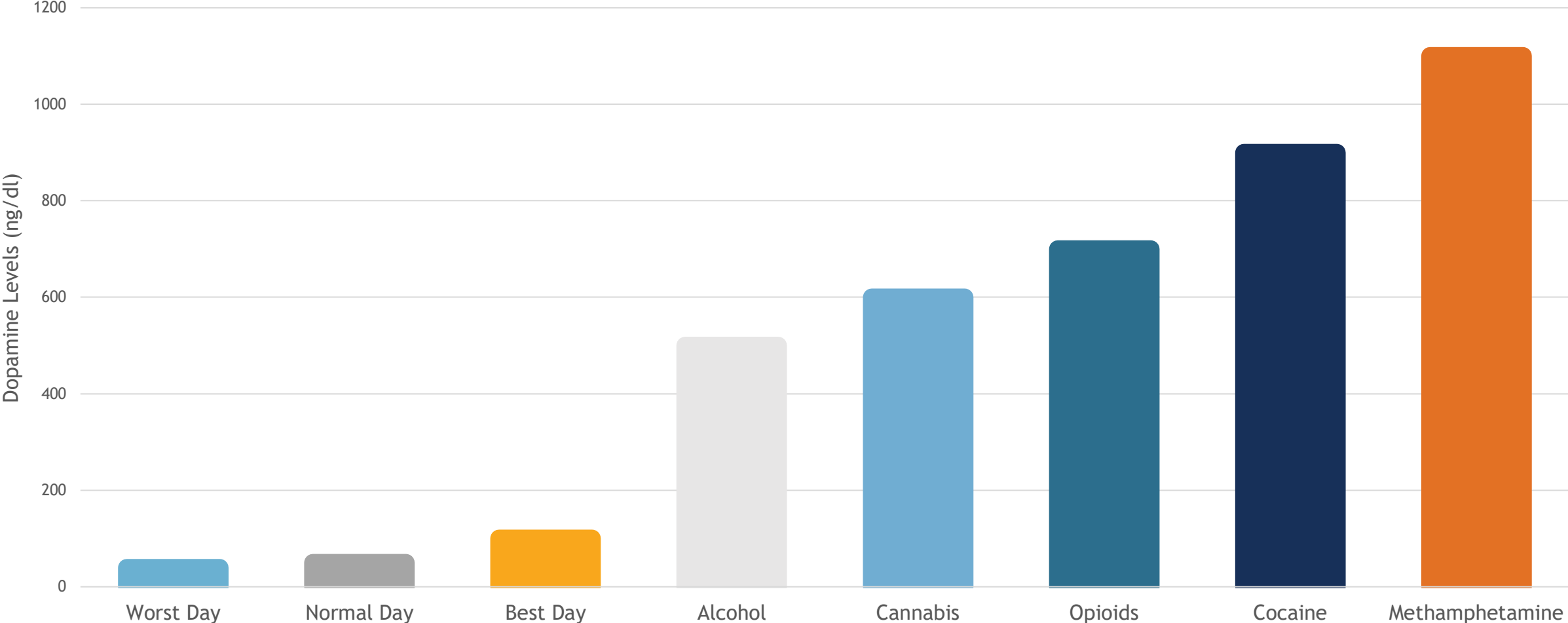
- All addictive substances result in the activation of the reward pathway
- The same pathway activated by naturally rewarding substances and events

Thinking part of brain

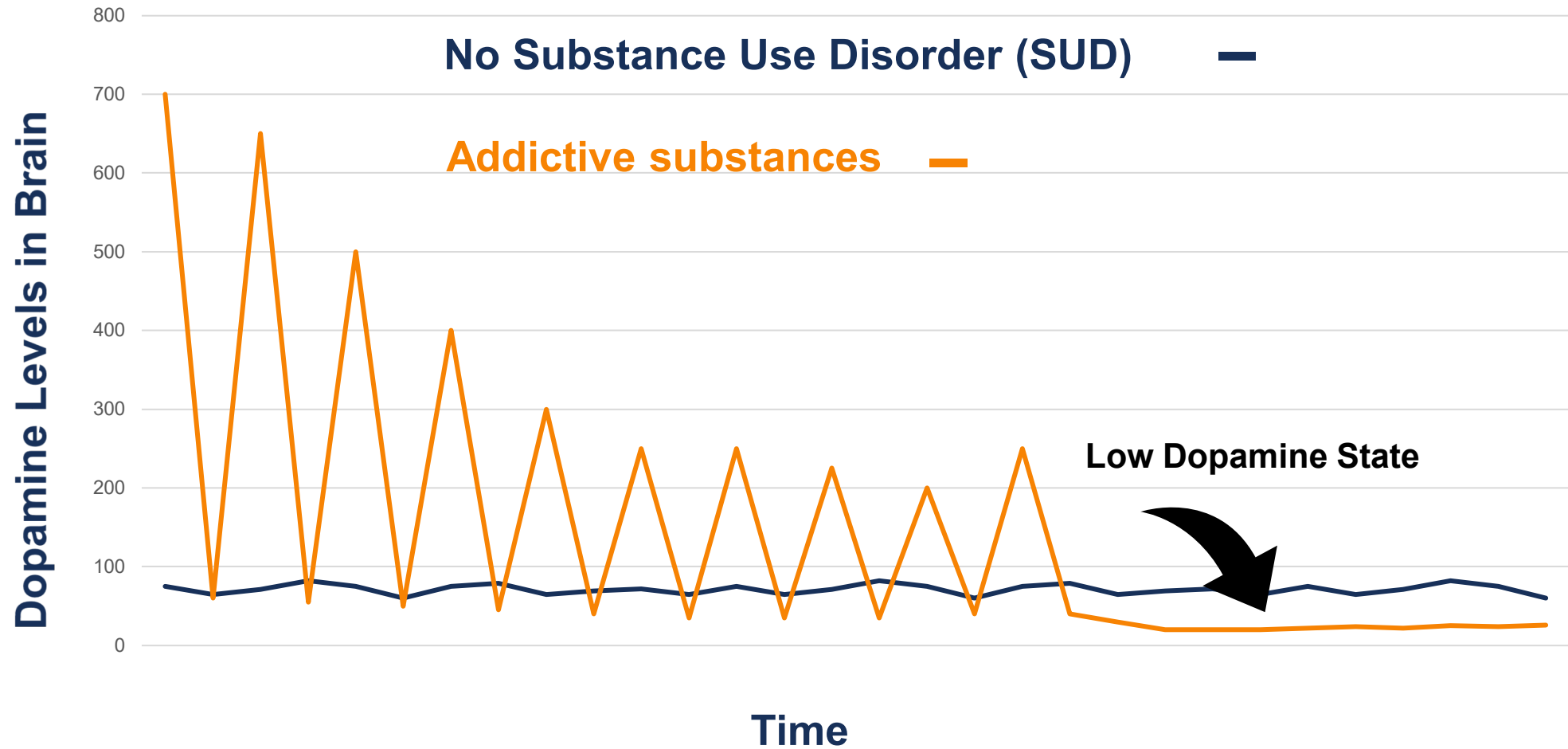
Primitive parts of brain



Dopamine Response



Brain Changes with Episodes of Substance Use



Intensity of Cravings

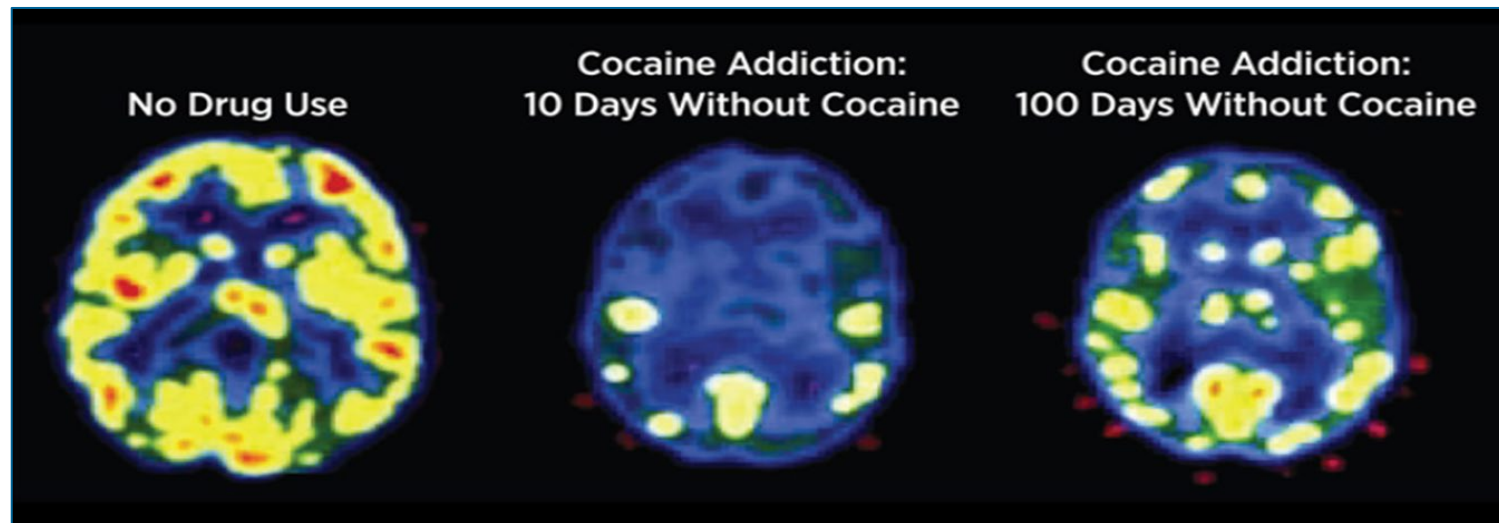
A direct, or indirect, force pulling someone towards a substance or behavior



It Takes Time for Your Brain to Recover

- After stopping use of addictive substances, it takes over a year for the brain to return to prior function
- If treatment ends or is interrupted before a year, the brain may lose the medication benefits

How the Brain Changes and Recovers from Substance Use



Treatment of Medical Disorders



Response to Acute Diagnosis or Exacerbation

Presents for treatment of	Diabetes	Opioid Use Disorder
Results from	Excess glucose	Excess opioid use
Immediate treatment	Stabilize glucose	Stabilize dopamine in brain
Short-term treatment	Adjust or start medication	Adjust or start medication
	Address lifestyle issues	Address lifestyle issues
	Refer for follow up	Refer for follow up



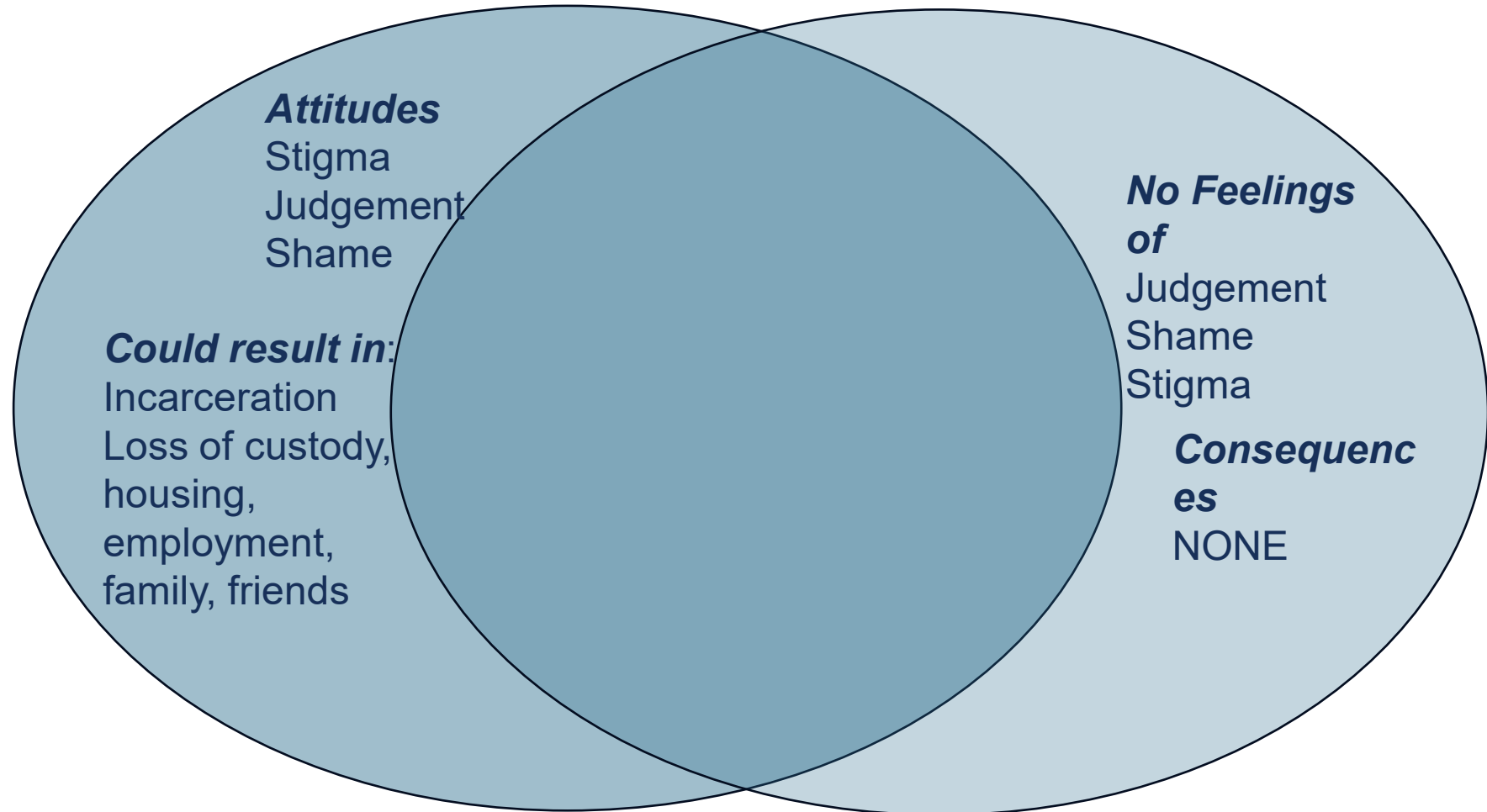
Adults who experienced a nonfatal overdose (OD) have 24 times greater risk of 1 year all cause mortality than general population.

Comparison of Two Chronic Diseases

Substance Use

Diabetes

What is different?



Features of Chronic Disease

Features	SUD	Hypertension	Diabetes II
Gradual onset	Yes	Yes	Yes
All racial, ethnic, IQ & income	Yes	Yes	Yes
Use of substance not allowed	Yes	Yes	Yes
Use despite negative effects	Yes	Yes	Yes
Can present as life threatening	Yes	Yes	Yes
Taking medication as prescribed	50%	50%	50%
Lifestyle changes needed & help	Yes	Yes	Yes
Return of symptoms after a period without symptoms	50%	60%	60%

Chronic Disease Over Time

- Remission (no symptoms)
 - Can medication be stopped? Or will symptoms return?
- Better but not in remission
 - Continue treatment
 - Adjust treatment with goal of remission
- Not responding or getting worse
 - Treatment is changed
 - Medications
 - Counseling
 - Mutual-help program



Photo Source: CC BY-NC-ND

Chronic Disease Model

Multidisciplinary
health care team

- Prescriber for medications
- Nutrition & lifestyle changes (psychosocial interventions/ therapy)
- Regular follow-up healthcare appointments
- Minimize risks from co-occurring illnesses

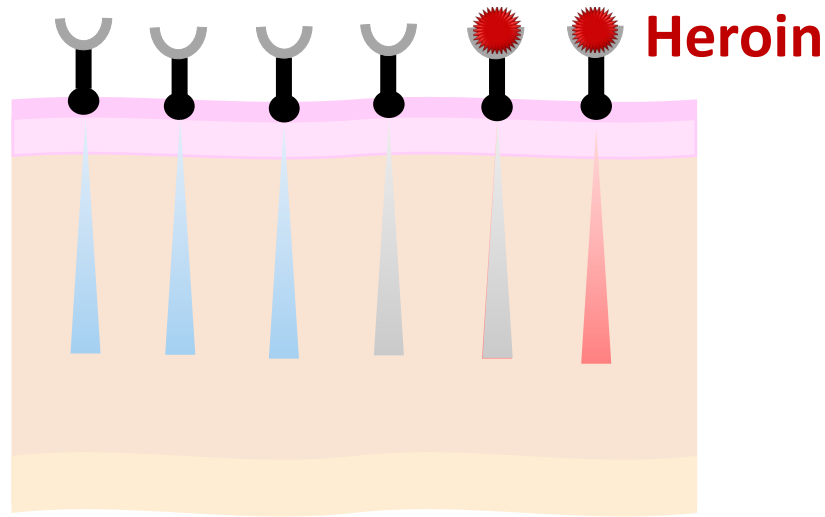
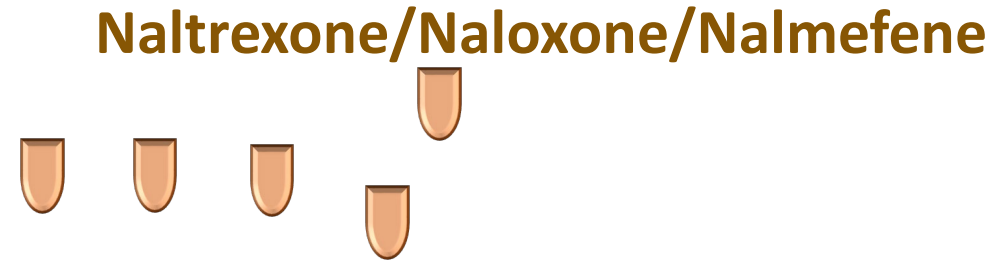
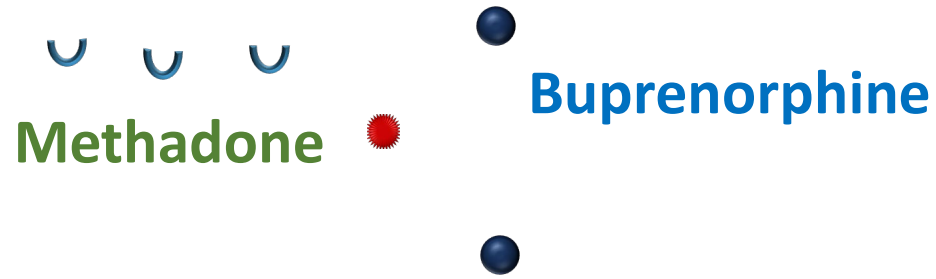
Goal - put illness
into remission,
when possible

- Perspective is over the lifetime
- Assessment & treatment over lifetime
- Relapses may occur

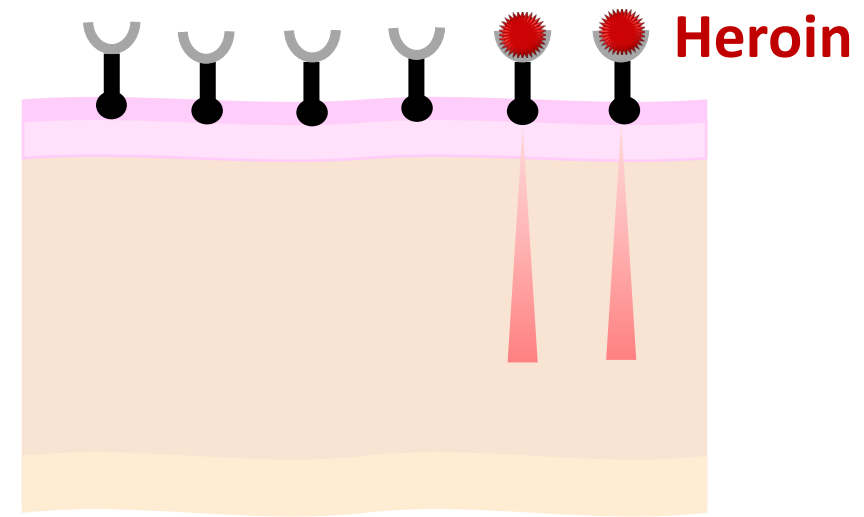
More Science and Data and The Implications for Treatment



How Do The FDA Approved Medications Work?

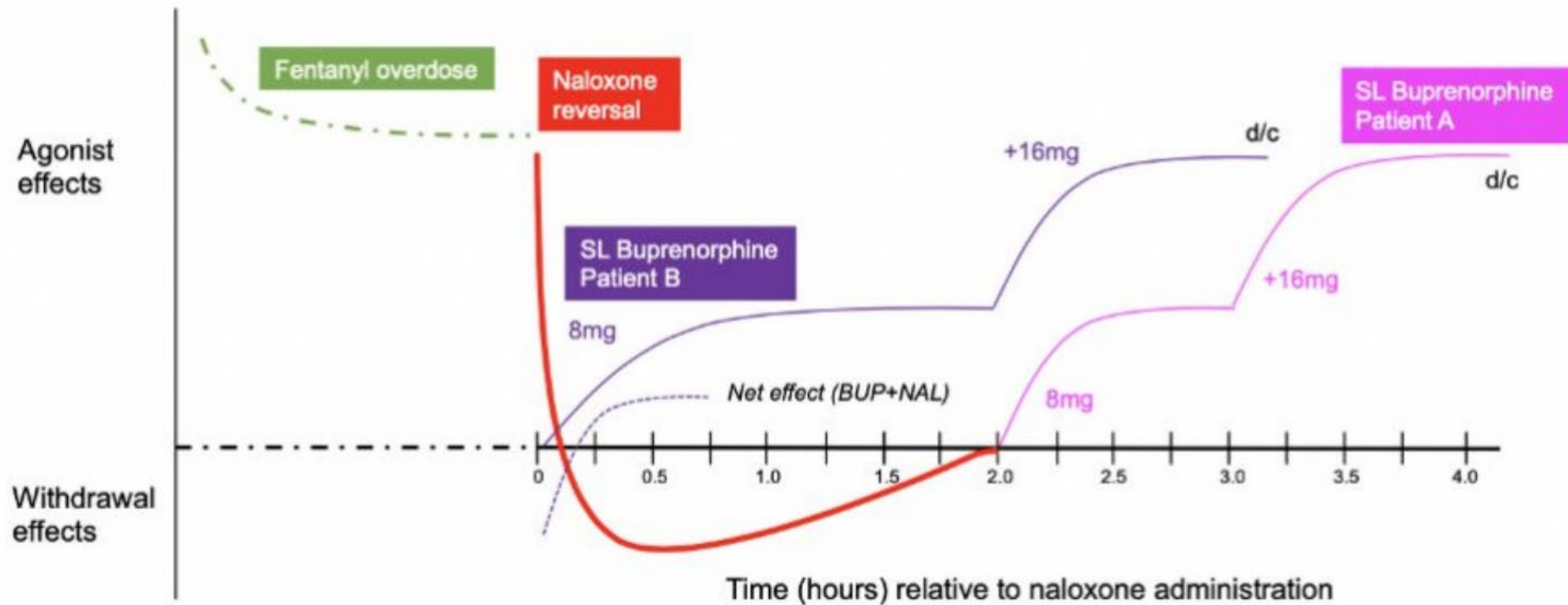


Agonist Treatment



Antagonist Treatment

Buprenorphine After Overdose Reversal



<https://bridgetotreatment.org/wp-content/uploads/CA-BRIDGE-PROTOCOL-Bup-after-overdose-reversal-September-2020.pdf>

MOUD is Safe

Agonist Treatment (turns on receptor):

- Methadone - approved for cough in 1940s, for OUD 1972
- Buprenorphine-approved in 1981 for pain; oral approved for OUD 2002; patch, implants, and injection later



Antagonist Treatment (blocks receptor from being turned on):

- Naltrexone-oral approved 1984; injectable 2006 AUD, OUD 2010
- Naloxone-approved 1961, autoinjector 2014, nasal spray 2015
- Nalmefene- injectable approved 1995; nasal spray 2023



MOUD is Effective

	Methadone	Buprenorphine	Naltrexone
Decreases withdrawal symptoms	yes	yes	no
Decreases cravings	yes	yes	yes
Decreases opioid use	yes	yes	yes
Decreases transmission of infectious diseases	yes	yes	Data not available
Decreases criminal activity	yes	yes	yes
Decreases overdoses	yes	yes	no
Decreases risk of death	yes	yes	no
Improves treatment retention	yes	yes	yes
Improves birth outcomes	yes	yes	Data not available
Increases employment	yes	yes	yes

MOUD During Pregnancy

MAT Treatment During Pregnancy	Methadone	Buprenorphine	Naltrexone	Consideration/ Reference
Initiation	Narcotic Treatment Program (NTP) ^a / In hospital ^b	In outpatient area/ home ^a / In hospital ^b	Not recommended	SAMHSA TIP 63 ASAM ^a / Up To Date ^b
Time to therapeutic dose	Weeks	1- days	1 day	SAMHSA TIP 63 ^a
Rx administration	Daily at NTP	Daily at home	Daily at home	SAMHSA TIP 63 ^a
Requires increased dose in 2nd & 3rd trimester	Yes	Yes	No	Minozzi 2013 ^{c, d}
Requires split dose in 2nd & 3rd trimester	Yes	Yes	No	Minozzi 2013 ^{c, d}
Risk of overdose	Decreased but possible	Decreased	Decreased; but loss of tolerance	SAMHSA 2018 ^{e, f}

SAMHSA. TIP 63, 2018; ASAM Practice Guidelines for OUD 2020 ^b Up To Date: <https://www.uptodate.com/contents/methadone-and-buprenorphine-pharmacotherapy-of-opioid-use-disorder-during-pregnancy>. ^c Minozzi S. Cochrane Review 2013. ^d Caritis 2017 Am J Ob Gyn. ^e SAMHSA. 2018, p 30. ^f FDA <https://www.vivitrol.com/content/pdfs/prescribing-information.pdf> Mascola, 2017. Link, 2020

MOUD During Pregnancy & Breastfeeding

- Improves adherence to prenatal & addiction care
- Improves maternal & fetal outcomes
- Reduces preterm birth
- Reduces still birth
- Reduces growth restriction
- Reduces Neonatal Abstinence Syndrome (NAS)
 - Reduces need for medication
 - Shortens hospital stays
- Neurological, cognitive and behavioral outcomes vary but generally like non opioid exposed infants (up to 8 years)

<https://www.cdc.gov/opioids/healthcare-professionals/prescribing/pregnancy.html#:~:text=According%20to%20SAMHSA%20and%20ACOG,triggers%20for%20return%20to%20use;>

American Academy of Pediatrics, Section on Breastfeeding. Pediatrics 2012

MOUD in Adolescents

- Median treatment retention
 - Methadone 324 days
 - Naltrexone 150 days
 - Buprenorphine 123 days
 - Behavioral health only 64 days

In CA adolescents at 16 can consent to MOUD & those 12 years old can consent to SUD treatment



Photo Source: Microsoft

SAMHSA (2019). Key Substance use and Mental health indicators in the US. Results from the *2018 National Survey on Drug Use and Health*, Hadland, (2018)

Racial and Ethnic Disparities in MOUD Prescribing

- Black and Hispanic patients are more likely to discontinue buprenorphine treatment earlier than White patients.¹
- Asian-Americans and Pacific Islanders with OUD had the lowest rate of opioid-specific treatment at 1.2%.²
- Recent reports from the CDC found that only one in twelve Black people who died of an opioid-related overdose had been engaged in substance use treatment, with White people being nearly twice as likely to receive treatment.²
- Black patients are more commonly referred for methadone.²
- White patients are 3-4 times more likely to receive buprenorphine.²

1. <https://www.sciencedirect.com/science/article/pii/S0740547216303658>

2. Lynch, S., Katkhuda, F., Klepacz, L., Towey, E., & Ferrando, S. J. (2023, February 7). *Racial disparities in opioid use disorder and its treatment: A review and commentary on the literature*. Journal of Mental Health & Clinical Psychology. <https://www.mentalhealthjournal.org/articles/racial-disparities-in-opioid-use-disorder-and-its-treatment-a-review-and-commentary-on-the-literature.html>

To Taper or Not? That is the Question

Evidence-Based Tapering of Agonist Treatment

Evidence is clear that long-term or indefinite treatment with medications for OUDs is often required for effective and sustained outcomes

In practice, successful tapers from methadone or buprenorphine typically occur in only about 15 percent of cases

According to the U.S. Surgeon General, successful tapers typically occur, if at all, when individuals have been treated with MAR for at least 3 years

National Academies of Sciences, Engineering, and Medicine. (2019). , Nosyk, B. et al. (2012). , SAMHSA & the Office of the Surgeon General (2018).

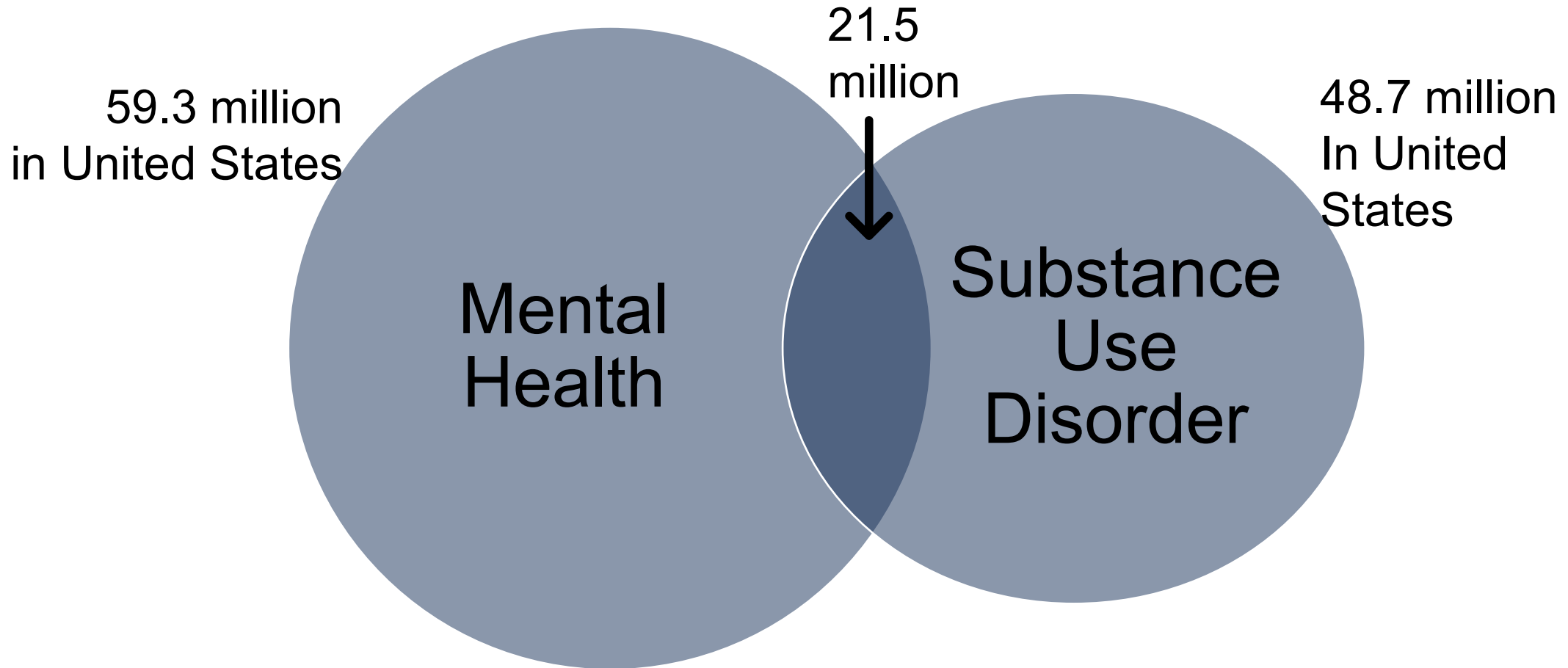
Xylazine



Co-Occurring Disorders



Co-occurring disorders Epidemiology United States 2022



Source: <https://www.samhsa.gov/data/sites/default/files/reports/rpt42731/2022-nsduh-nnr.pdf>

Co-Occurring Disorders with Opioid Use Disorder

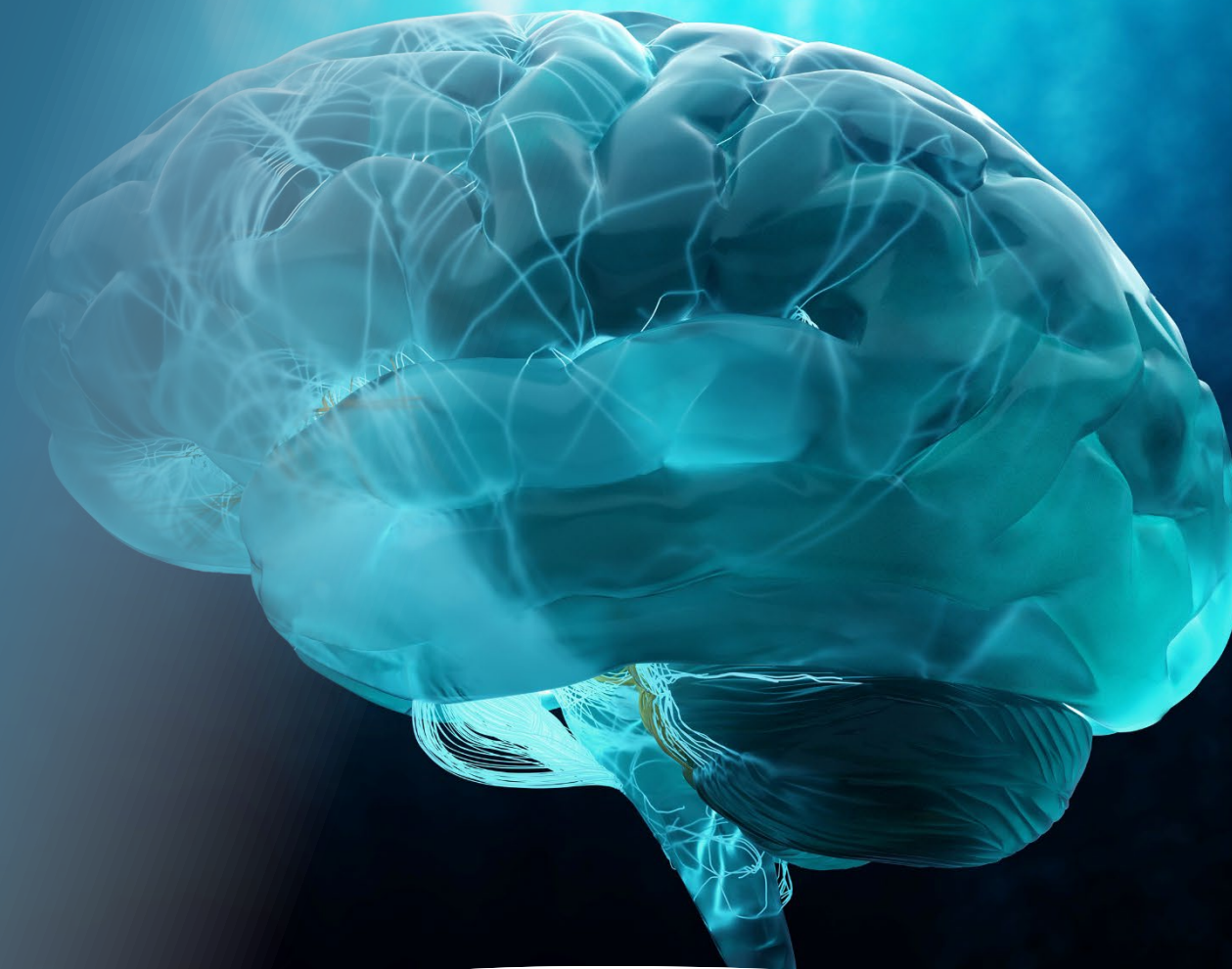
- Of 2 million US adults with OUD (2015-17)
 - 77% had another substance use disorder (SUD) or nicotine dependence in past year
 - 64% had co-occurring MH disorder in past year



Photo Source: Microsoft

Sources: Substance Abuse and Mental Health Services Administration. (2020). Key substance use and mental health indicators in the United States: Results from the 2019 National Survey on Drug Use and Health (HHS Publication No. PEP20-07-01-001, NSDUH Series H-55). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>
Substance Abuse Mental Health Services Agency. 2020. Substance Use Disorder Treatment for People with Co-occurring Disorders Treatment Improvement Protocol Tip 42. SAMHS. Rockville, MD. Retrieved from https://store.samhsa.gov/sites/default/files/SAMHSA_Digital_Download/PEP20-02-01-004_Final_508.pdf

Barriers



Is This Thought True or False?

“They Need To Hit Rock Bottom Before They Will Get Better”

FALSE

- Rock bottom in the era of fentanyl is deceased
- Research shows that people who are coerced to go into treatment for criminal justice reasons or to maintain a job have similar outcomes to those who choose treatment

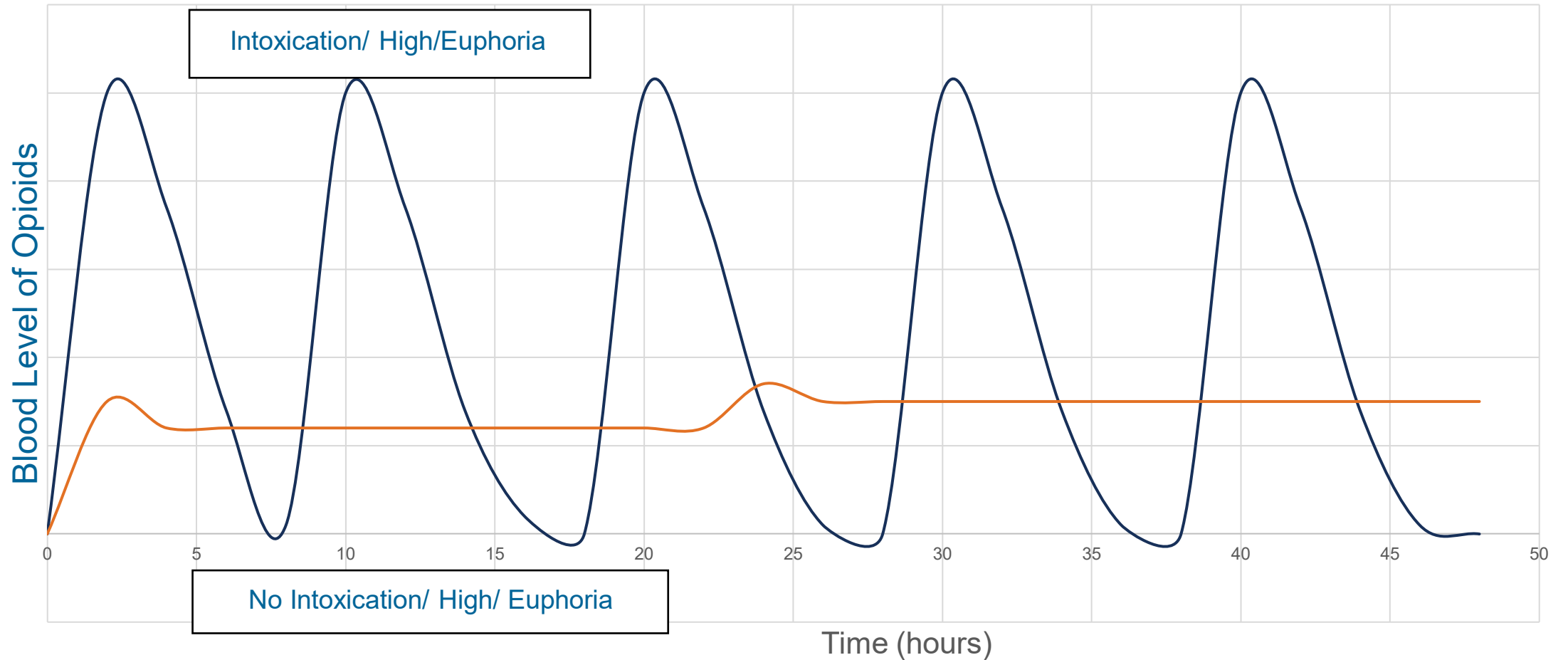


Photo Source: Microsoft

Sources: Pilarinos, A., Barker, B., Nosova, E., Milloy, M-J., Hayashi, K., Wood, E., Kerr, T., & DeBeck, K. (2021). Coercion into addiction treatment and subsequent substance use patterns among people who use illicit drugs in Vancouver, Canada. *Addiction*, 115(1), 97-106. DOI: 10.1111/add.14769
Farabee, D et al. 1998 · The effectiveness of coerced treatment for drug-abusing offenders. *Federal Probation*, 62(1), 3–10.

Physiologically: We Are Not Replacing One Drug with Another

Blood Level of Illicit Opioids vs. MOUD



True or False?

“Unless there is Counseling, you can’t have Medication for OUD”

FALSE -

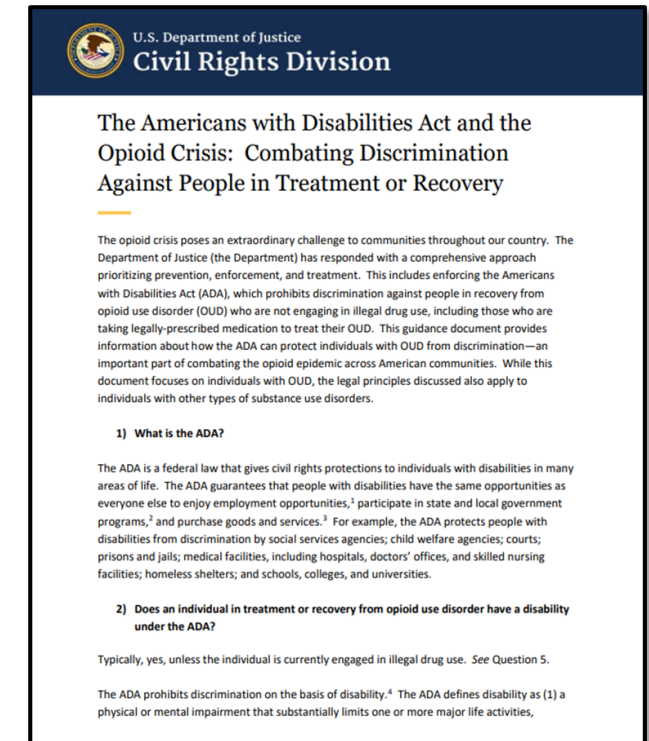
- **Medications improve patient survival**
 - *Sordo 2017, Wakeman 2020, Walley 2020, Santo 2022*
- **Medications increase retention in treatment**
 - *Mattick 2009 & 2014, Lobmaier 2008*
- **Medications decrease illicit opiate use more than therapy alone**
 - *Mattick 2009 & 2014; Krupitsky 2011, Lutgen-Nieves, L. 2021*
- **Medications improve birth outcomes among women who have substance use disorders and are pregnant**
 - *SAMHSA TIP 63 2018, ASAM Practice Guidelines for OUD 2020, Mascola 2017*

True or False?

“We Can’t Start MOUD because of risk”

FALSE

- Federal & state lawsuits have resulted in verdicts & settlements against hospitals, jails/prisons, nursing homes & outpatient practices that have refused treatment of patients on MOUD
- Americans with Disabilities Act (ADA) prohibits discrimination based on disability
 - Violation if:
 - person has a disability, including substance use disorder
 - person is denied the public entity’s services/programs/activities - medical care because of their disability



Source: DOJ Civil Rights Division (2022) The Americans with Disabilities Act and the Opioid Crisis: Combating Discrimination Against People in Treatment or Recovery and ACLU (2022) How the Failure to Provide Treatment for Substance use in Prisons and Jails Fuels the Overdose Epidemic Over-Jailed and Un-Treated

Stigma, Thoughts, and Misinformation

“They need to make better choices. The patient is in this situation as a result of their own choices.”

“Having Narcan encourages people to party harder.”

“Treating people with addiction takes up resources that could be used for more critical conditions.”

“I got sober without meds; abstinence-based treatment is better.”

“Having clean needles encourages people to party harder.”

Sources: Strugar-Fritsch, (2019), McLellan, (2000):

<https://www.nap.edu/catalog/25310/medications-for-opioid-use-disorder-save-live>

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THANK YOU

