Opioid Use Disorder: A Clinical and Research Update

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Disclosures

- I receive/have received grant/sponsorship funding from:
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  - National Institute on Drug Abuse
  - National Center for Complementary and Integrative Health
  - National Cancer Institute
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  - Department of Defense
  - Empire Health Foundation
  - WSU Office of Research

Learning Objectives

- Review recent trends in the incidence and prevalence of Opioid Use Disorder (OUD) and drug overdose deaths, including among youths
- Update participants on current OUD research efforts and the impact of interventions on clinical outcomes by demographic region
- Provide examples of evidence-based medication and psychosocial interventions used to treat Opioid Use Disorder, including Medication-Assisted Treatment (MAT) and Contingency Management (CM).

Opium



Opium poppy seed pod exuding latex from a cut

Source plant(s)	*Papaver somniferum*
Part(s) of plant	Latex capsule seeds
Geographic origin	Uncertain, possibly Asia Minor,[1] or Spain, southern France and northwestern Africa[2]
Active ingredients	Morphine · codeine · noscapine · papaverine · thebaine

Opioid Terms

Opium poppy - cultivated as early as 3400 BC in Mesopotamia

Opium refers to a mixture of alkaloids from the poppy seed

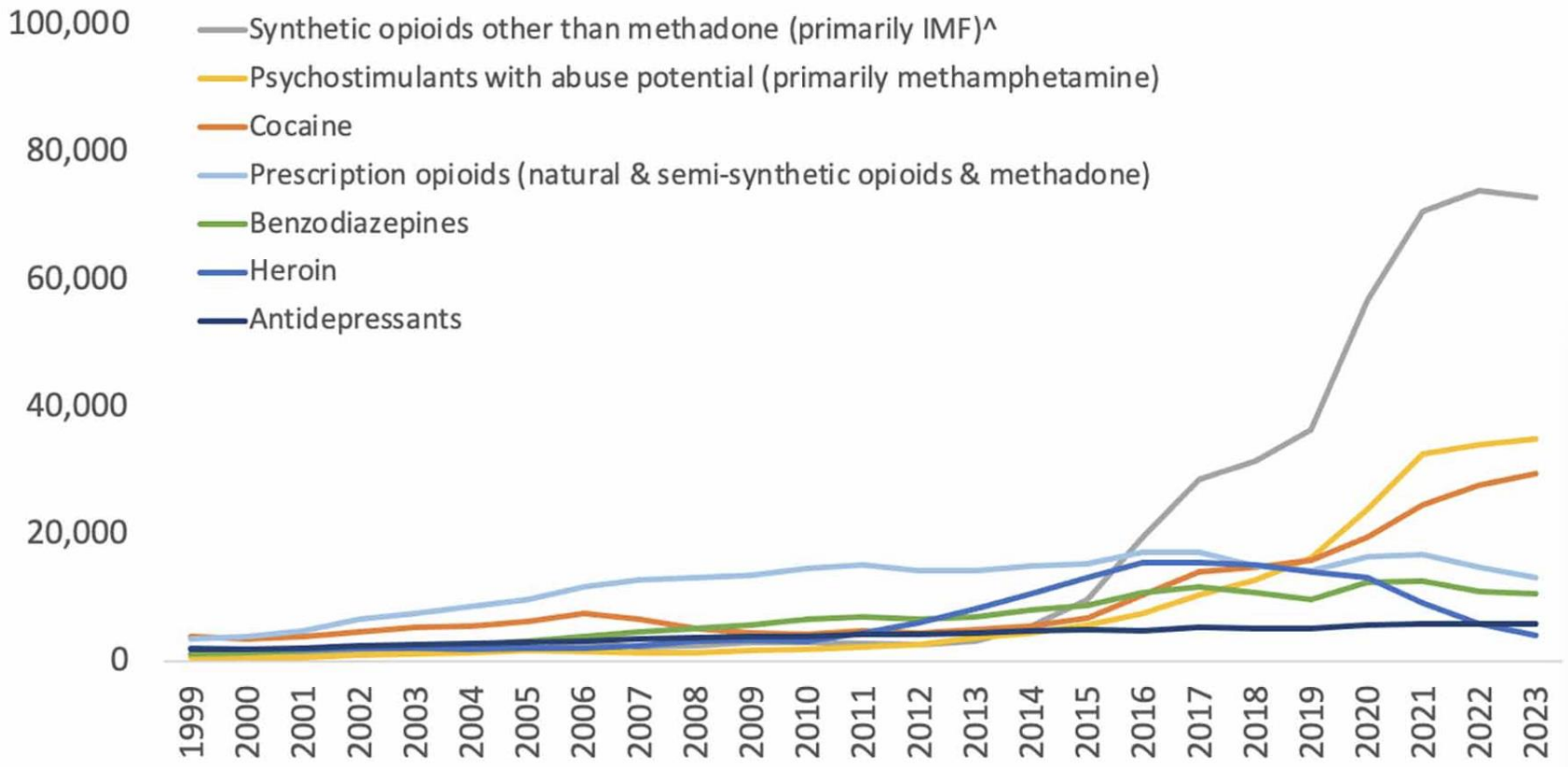
Opiates are naturally occurring alkaloids such as morphine or codeine

Opioid is the term used broadly to describe all compounds that work at the opioid receptors

Narcotic - from the Greek word for stupor

Originally used to describe medications for sleep
Later used to describe opioids
Now a legal term for drugs that are abused

Figure 2. U.S. Overdose Deaths*, Select Drugs or Drug Categories, 1999-2023



*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. ^Illicitly manufactured fentanyl. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2023 on CDC WONDER Online Database, released 1/2025. https://nida.nih.gov/research-topics/trends-statistics/overdose-death-rates (2024)

Overdose Deaths

Based on data available for analysis on: April 5, 2026

Figure 1a. 12 Month-ending Provisional Counts of Drug Overdose Deaths: United States

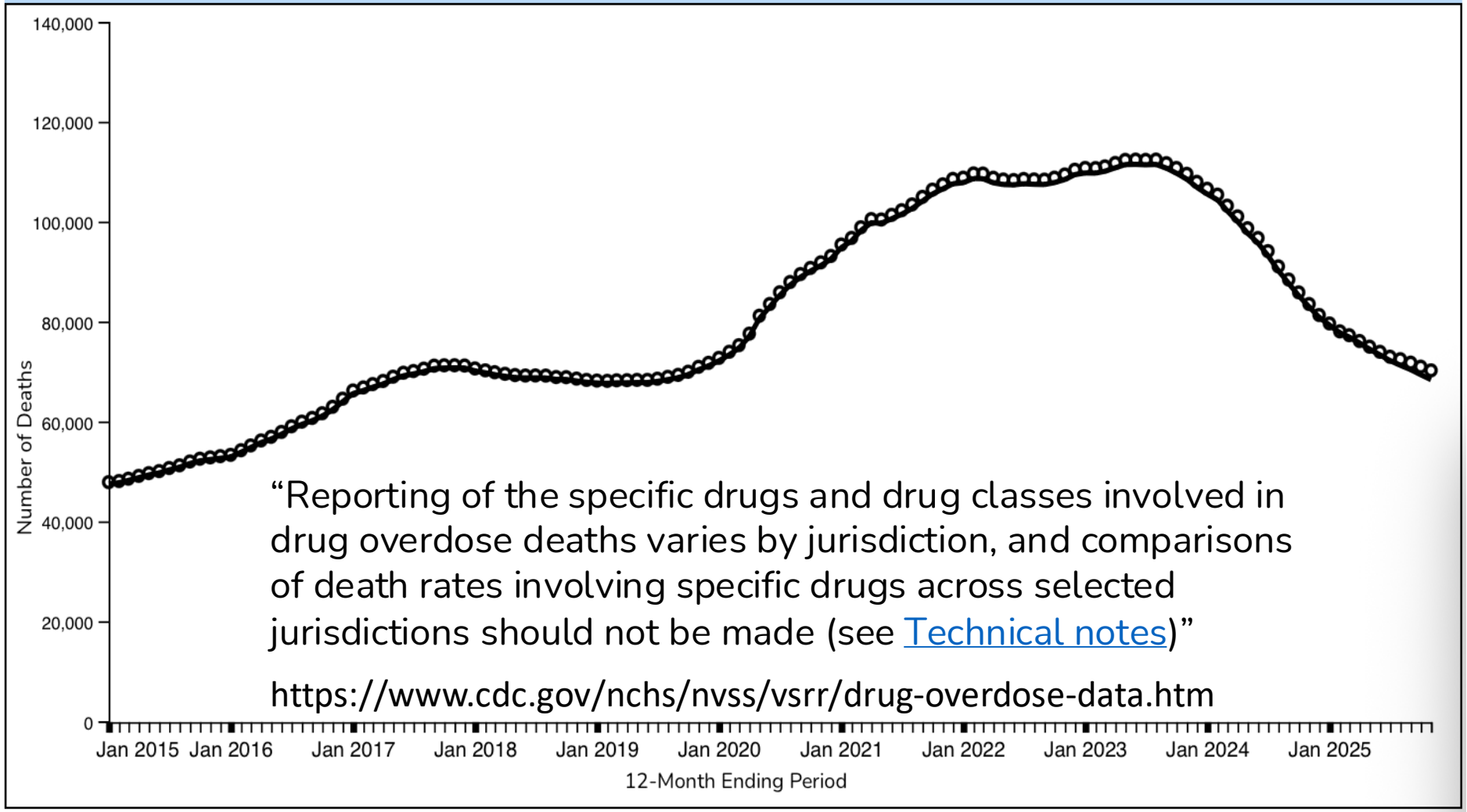
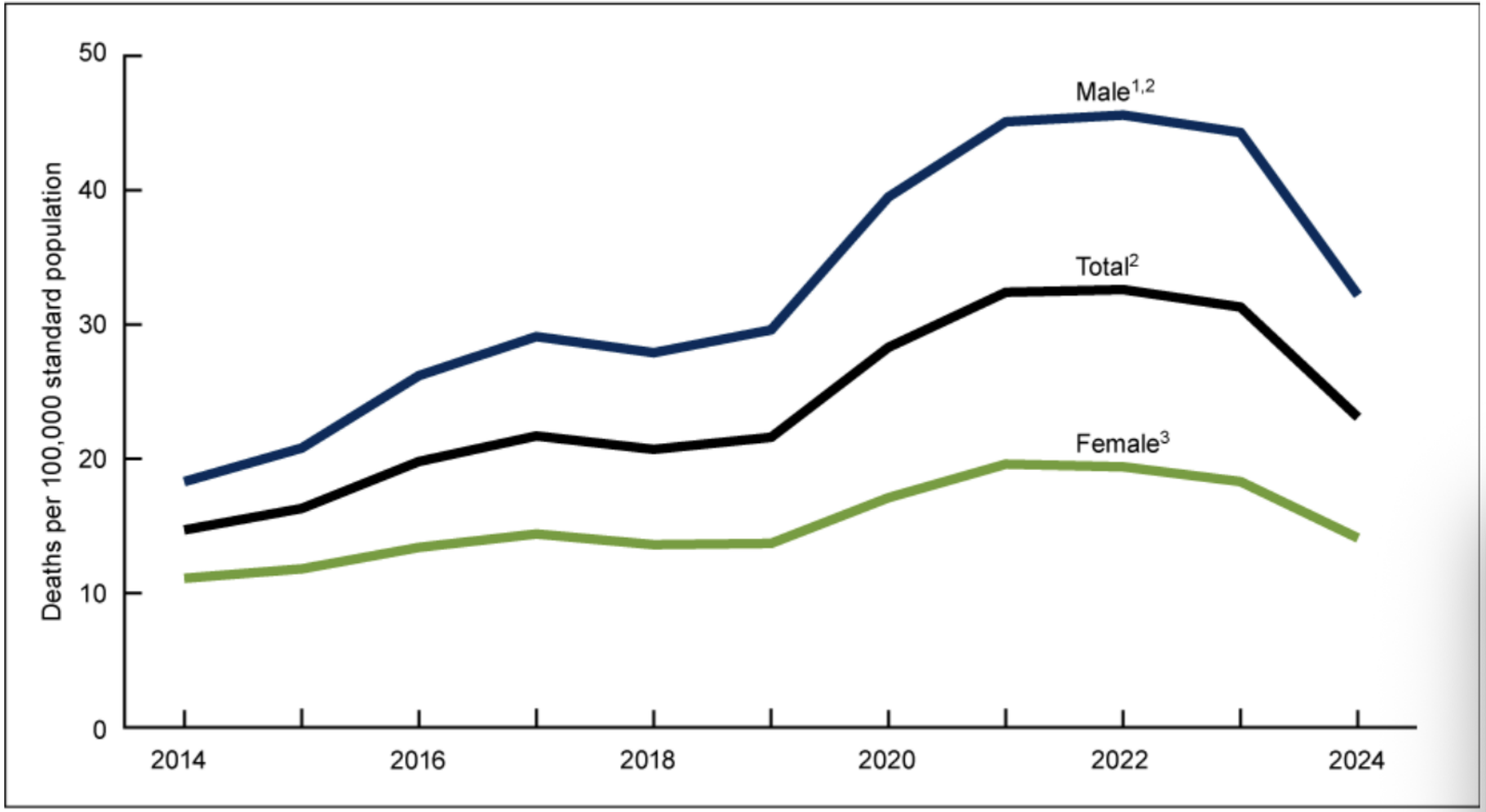
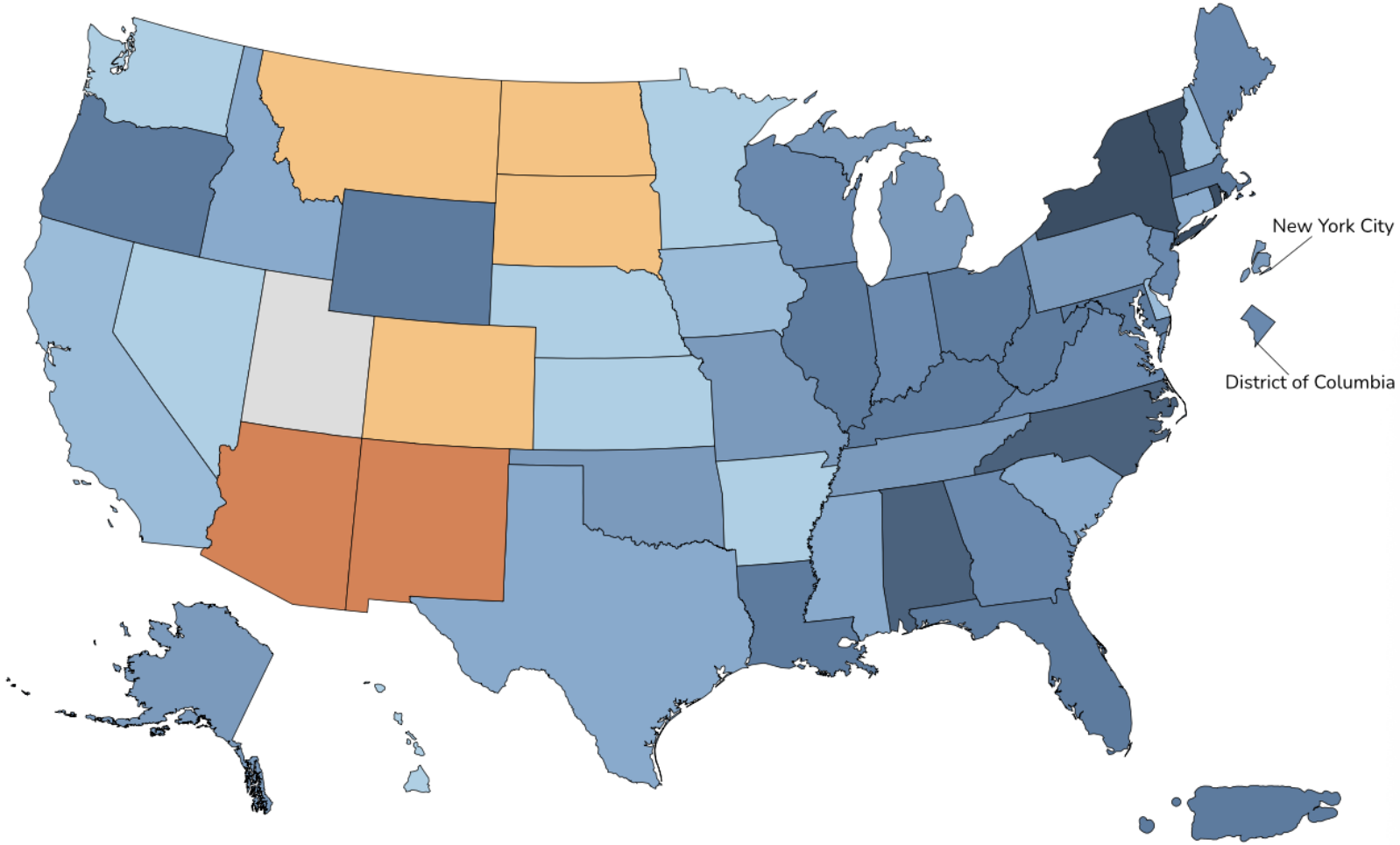


Figure 1. Age-adjusted rate of drug overdose deaths, by sex: United States, 2014–2024



[1]Significantly higher than for females for all years ($p < 0.05$).
[2]Significant increasing trend from 2014 to 2022 ($p < 0.05$). Rate in 2024 was significantly lower than in 2023 and 2022 ($p < 0.05$).
[3]Significant increasing trend from 2014 to 2022 and significant decreasing trend from 2022 to 2024 ($p < 0.05$). Rate in 2024 was significantly lower than in 2023 ($p < 0.05$).
NOTES: Drug overdose deaths are identified using *International Classification of Diseases, 10th Revision* underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14. The number of drug overdose deaths in 2024 was 79,384. Age-adjusted death rates were calculated using the direct method and the 2000 U.S. standard population.
SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

Figure 1b. Percent Change in Predicted 12 Month-ending Count of Drug Overdose Deaths, by Jurisdiction: November 2024 to November 2025



https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm


OPIOID
ADDICTION
elara
systems

DSM-5-TR General Diagnostic Criteria for a Substance Use Disorder (SUD)

A. A problematic pattern of _____use leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period:

1. _____is often taken in larger amounts or over a longer period than was intended.
2. There is a persistent desire or unsuccessful efforts to cut down or control _____ use.
3. A great deal of time is spent in activities necessary to obtain _____, use _____, or recover from its effects.
4. Craving, or a strong desire or urge to use_____.
5. Recurrent _____ use resulting in a failure to fulfill major role obligations at work, school, or home.
6. Continued _____ use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of _____.
7. Important social, occupational, or recreational activities are given up or reduced because of _____ use.
8. Recurrent _____ use in situations in which it is physically hazardous.
9. _____ use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by _____.
10. Tolerance, as defined by either of the following:
    a. A need for markedly increased amounts of_____to achieve intoxication or desired effect.
    b. A markedly diminished effect with continued use of the same amount of _____.
11. Withdrawal, as manifested by either of the following:
    a. The characteristic withdrawal syndrome for _____ (refer to Criteria A and B of the criteria set for _____withdrawal).
    b. A closely related substance…is taken to relieve or avoid withdrawal symptoms.



Substance Use Disorders (SUD) Severity and Specifiers

- *Mild* = two to three symptoms
- *Moderate* = four to five symptoms
- *Severe* = six or more symptoms.

Course specifiers and descriptive features for SUD:

- “in early remission,”
- “in sustained remission,”
- “on maintenance therapy,” and
- “in a controlled environment.”

Based On:

- Individual’s own report
- Report of knowledgeable others
- Clinician’s observations
- Biological testing.

Risk Factors for High-Risk Substance Use

Risk factors for youth high-risk substance use can include:

- Family history of substance use
- Favorable parental attitudes towards the behavior
- Poor parental monitoring
- Parental substance use
- Family rejection of sexual orientation or gender identity
- Association with delinquent or substance using peers
- Lack of school connectedness
- Low academic achievement
- Childhood sexual abuse
- Mental health issues



High-Risk Substance Use Among Youth

WHO updates guidelines on opioid dependence treatment and overdose prevention

https://www.who.int/news/item/02-04-2026-who-updates-guidelines-on-opioid-dependence-treatment-and-overdose-prevention

Rapid communication on selected recommendations

2 April 2026 | Departmental update |Reading time: 1 min (368 words)

WHO announces the update of several recommendations in the forthcoming guidelines for the treatment of opioid dependence and the community management of opioid overdose.

Opioid dependence remains a major contributor to global morbidity and mortality. An estimated 316 million people worldwide used drugs in 2023, including around 61 million people who engaged in non-medical opioid use. Opioids continue to account for the largest share of the drug-related health burden, including fatal overdose. Of approximately 600 000 deaths attributed to drug use globally, about 450 000 are due to opioid use.

Treatment

There is a variety of evidence-based interventions developed to treat SUD.

- Pharmacological interventions
- Psychosocial interventions

All of them target directly or indirectly substance use.



Treatment (cont'd)

- Harm Reduction vs. Abstinence-Only approaches
- Medication-Assisted Treatment
- Currently the FDA has approved medications to treat opioid, alcohol and tobacco use disorders.
- There is no FDA approved medication for stimulants (i.e., cocaine, amphetamine, methamphetamine) or cannabis.



FDA-approved medications for opioid use disorder treatment and mechanism of action

Medication	Effect
Buprenorphine, buprenorphine/naloxone (approved dose 8 to 32 mg/d; recommended dose 8 to 16 mg/d)	Mu partial agonist
Methadone (doses between 60 and 100 mg/d in methadone clinics)	Mu opioid agonist
Naltrexone (oral dose 50 to 100 mg/d; injectable dose 380 mg IM once every 4 weeks)	Mu antagonist
Naloxone nasal spray, IM or IV formulations (dose 0.4 to 2 mg for opioid overdoses only)	Mu antagonist



Evidence-Based Psychosocial Treatments for SUD

- Contingency Management (all substances)
- Cognitive Behavioral Therapy Motivational Enhancement Therapy/ --- Motivational Interview (alcohol, cocaine, smoking)
- Behavioral Couples Therapy (alcohol, cocaine)
- Behavioral Family Therapy for adolescents (alcohol, cocaine, marijuana smoking)
- Community Reinforcement Approach (alcohol, cocaine)
- Twelve Step facilitation therapy (alcohol, cocaine)



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Original Article

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Hyperbaric Oxygen to Assist Adults With Opioid Use Disorder in Reducing Methadone Dose

Marian Wilson, PhD, MPH, RN-BC ❍ Tamara Odom-Maryon, PhD ❍ Karen Stanek, PhD, MD ❍ Trevor Roush, BS ❍ Joseph Muriungi, AA ❍ Alvina Jesse, AA ❍ Raymond M. Quock, PhD ❍ Matthew Layton, PhD, MD

Down

Elson S. Floyd College of Medicine

HHS Public Access

Author manuscript

Brain Res. Author manuscript; available in PMC 2017 October 01.

Published in final edited form as:

Brain Res. 2016 October 1; 1648(Pt A): 434–437. doi:10.1016/j.brainres.2016.08.017.

Hyperbaric oxygen treatment suppresses withdrawal signs in morphine-dependent mice

Daniel Nicoara[a,1], **Yangmiao Zhang**[b,2], **Jordan T. Nelson**[a,3], **Abigail L. Brewer**[a], **Prianka Maharaj**[b], **Shea N. DeWald**[a], **Donald Y. Shirachi**[d], and **Raymond M. Quock**[a,b,c,*]

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SPOKANE

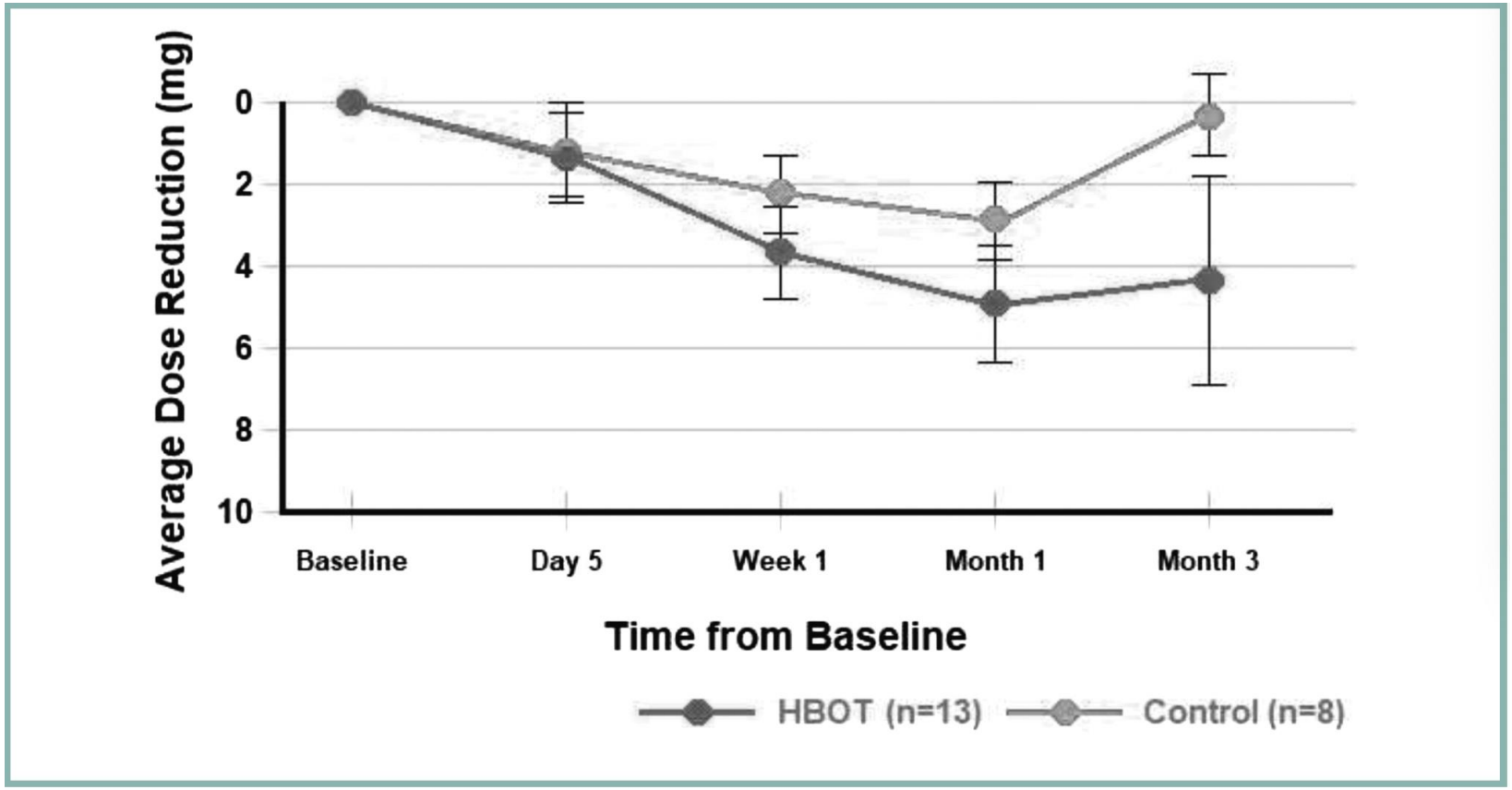


Figure 3. Mean methadone dose reduction in milligrams for the treatment and control groups from baseline to 3 months.

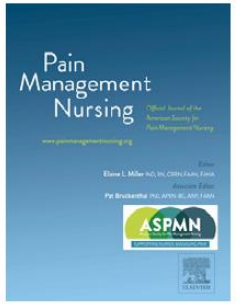
JID: YJPMN [mNS;April 4, 2022;17:26]

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Original Article

Hyperbaric Oxygen Therapy for Pain, Opioid Withdrawal, and Related Symptoms: A Pilot Randomized Controlled Trial

Marian Wilson, Ph.D., M.P.H., R.N.[*,†,‡], Ross J. Bindler, PharmD[*,1], Karen Stanek, Ph.D., M.D.[§], Matthew E. Layton, Ph.D., M.D.[†,‡,‖], Raymond M. Quock, Ph.D.[¶]

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Hyperbaric Oxygen Therapy (HBOT) & Methadone Tapering

AIMS

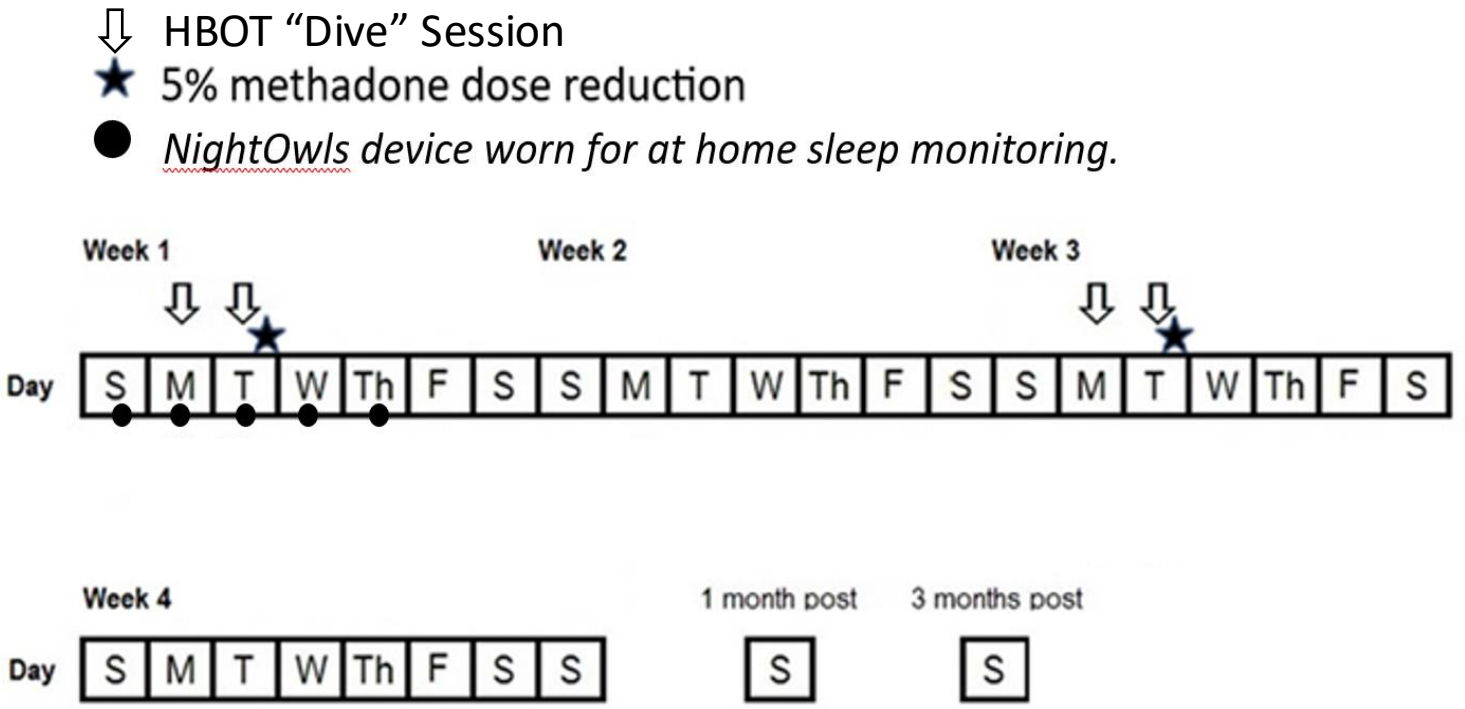
To examine the effects of **various doses** of pressurized oxygen on withdrawal symptoms for adults in methadone treatment for OUD.

- Three conditions
- 100% oxygen, 2.0 ATA (Full-Dose HBOT)
- 100% oxygen, 1.3 ATA (Medium-Dose HBOT)
- 21% oxygen, 1.3 ATA (Low-Dose HBOT)

- More data points (twice daily withdrawal surveys)

Method

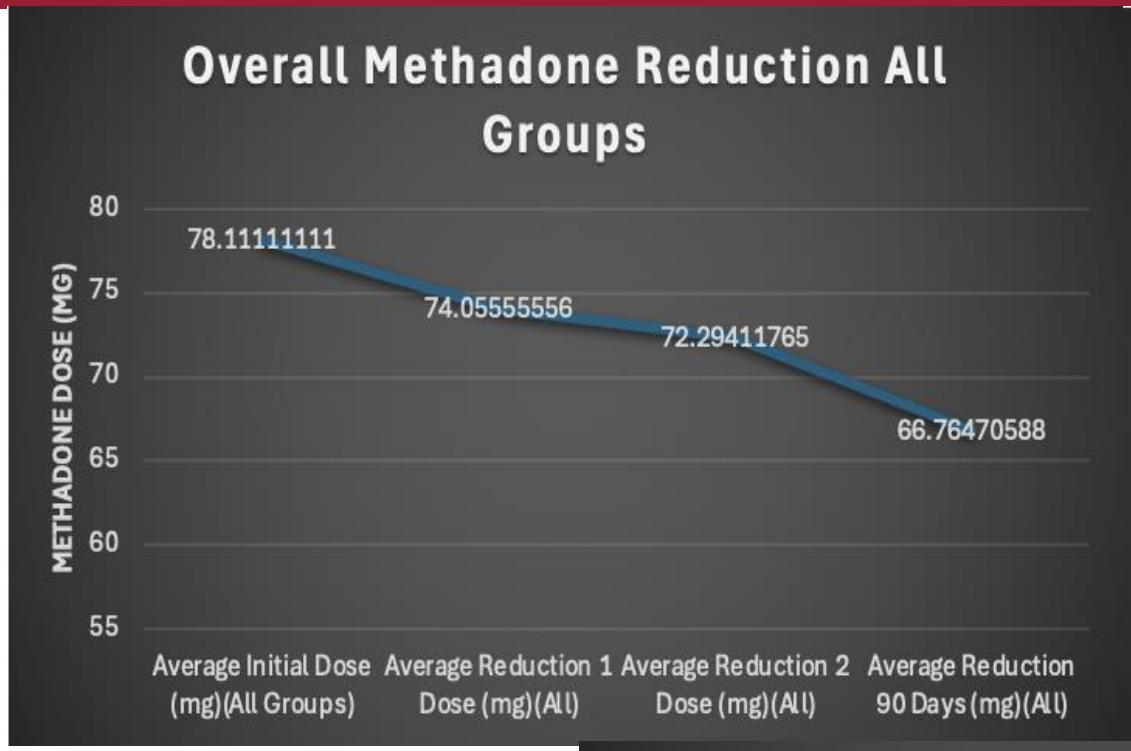
A clinically supervised 5%/5mg dose reduction on Dives 2/4 and 4/4 with regular surveys (withdrawal, sleep, pain, mental health) before, during, and after; and NightOwls used to track sleep.

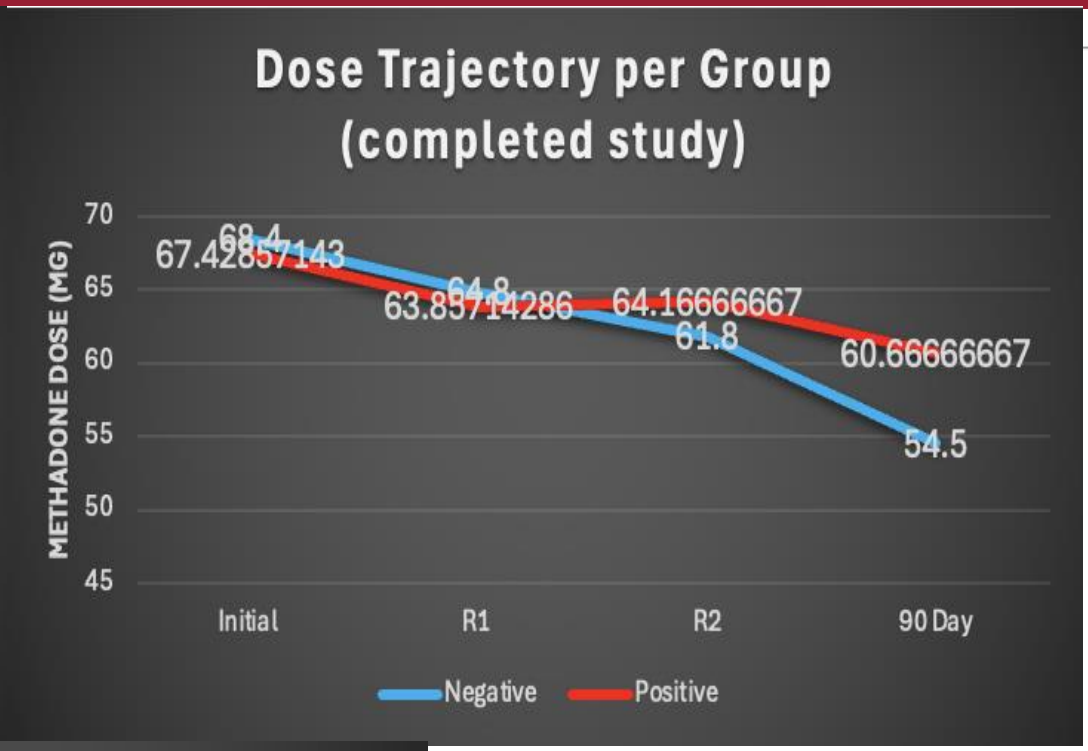


Recruitment & Progress

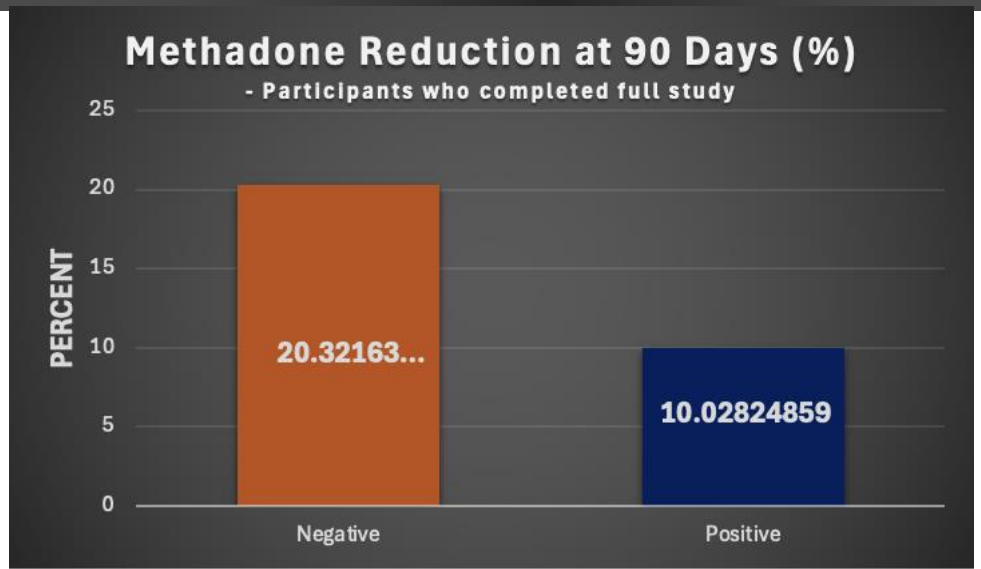
- 60 expressed interest (from two clinics)
- 44 consented
- 26 screened by the HBOT doc
- 22 entered the chamber at any point
- 20 completed ≥1 dives

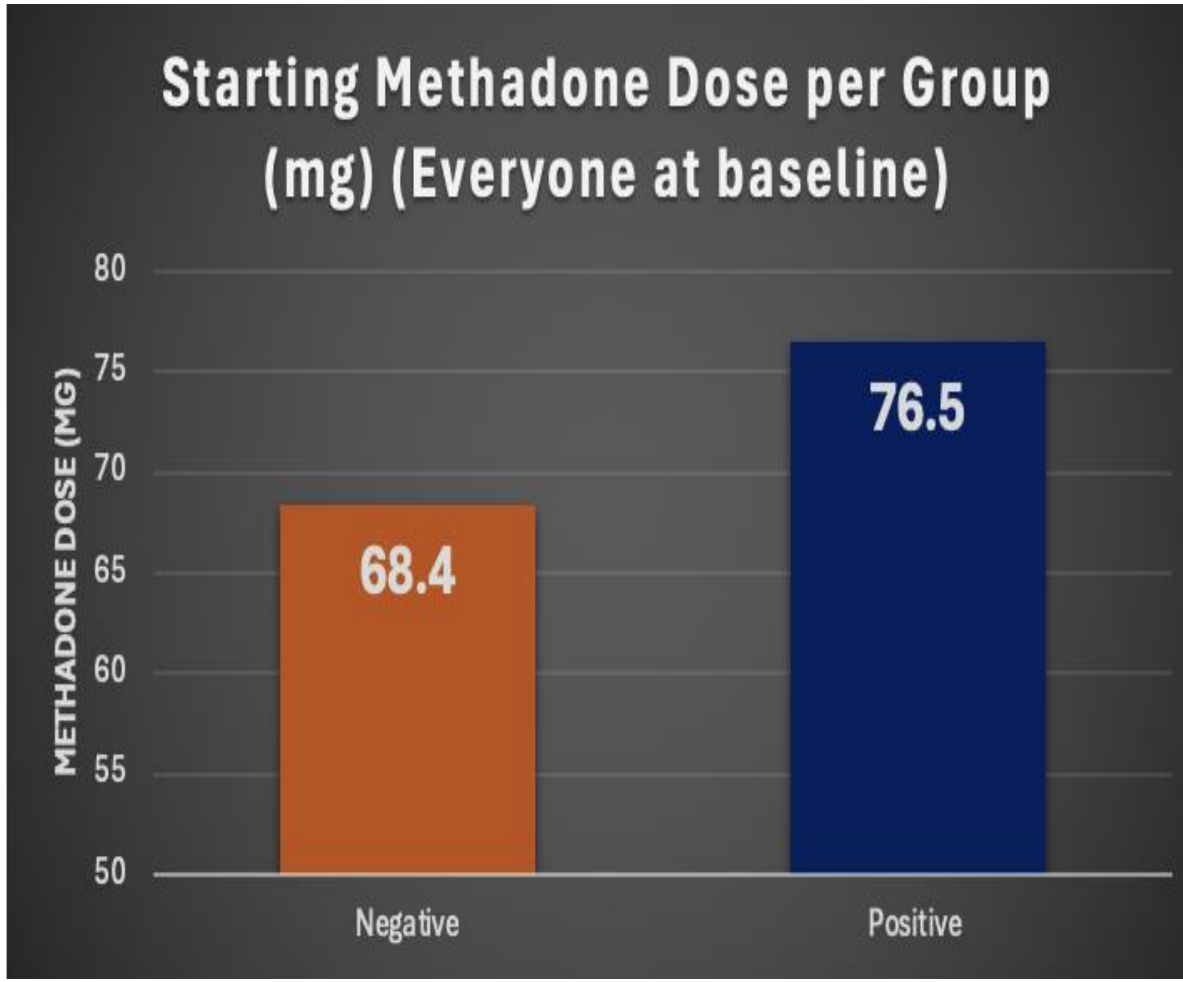
- Data collection (surveys) incredibly varied – lots of data points





14% Total Dose Reduction



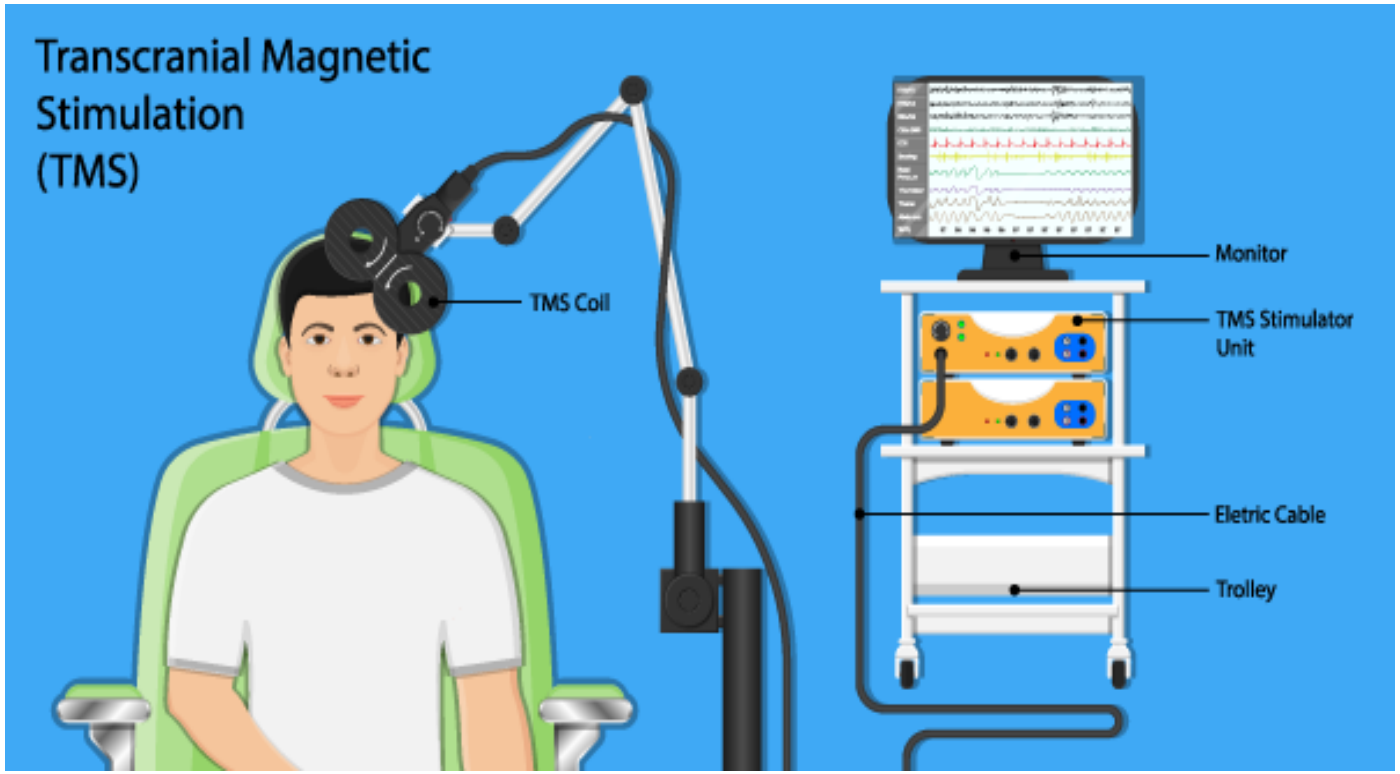

Starting Methadone Dose per Group (mg) (Everyone at baseline)
METHADONE DOSE (MG)
80
75
70
65
60
55
50
68.4
76.5
Negative
Positive


Completion Rate
Positive
Negative
0
2
4
6
8
10
12
Completed
Participants

Participant Feedback & Take Away Messages

- Participants enjoyed the engagement and saw wide benefits
- More HBOT sessions were requested, frequently
- Providing transport and working “in a group” was beneficial
- High interest in lowering dose and using non-pharma treatment
- Feasible protocol – but lots of surveys may be overwhelming.

Transcranial Magnetic Stimulation (TMS)





Gabon is one of the few places the plant naturally propagates. Photograph: Biosphoto/Alamy

Tabernanthe iboga

Observational Study > Am J Drug Alcohol Abuse. 2018;44(1):37-46.
doi: 10.1080/00952990.2017.1310218. Epub 2017 Apr 12.

Ibogaine treatment outcomes for opioid dependence from a twelve-month follow-up observational study

Geoffrey E Noller [1], Chris M Frampton [2], Berra Yazar-Klosinski [3]

Affiliations + expand

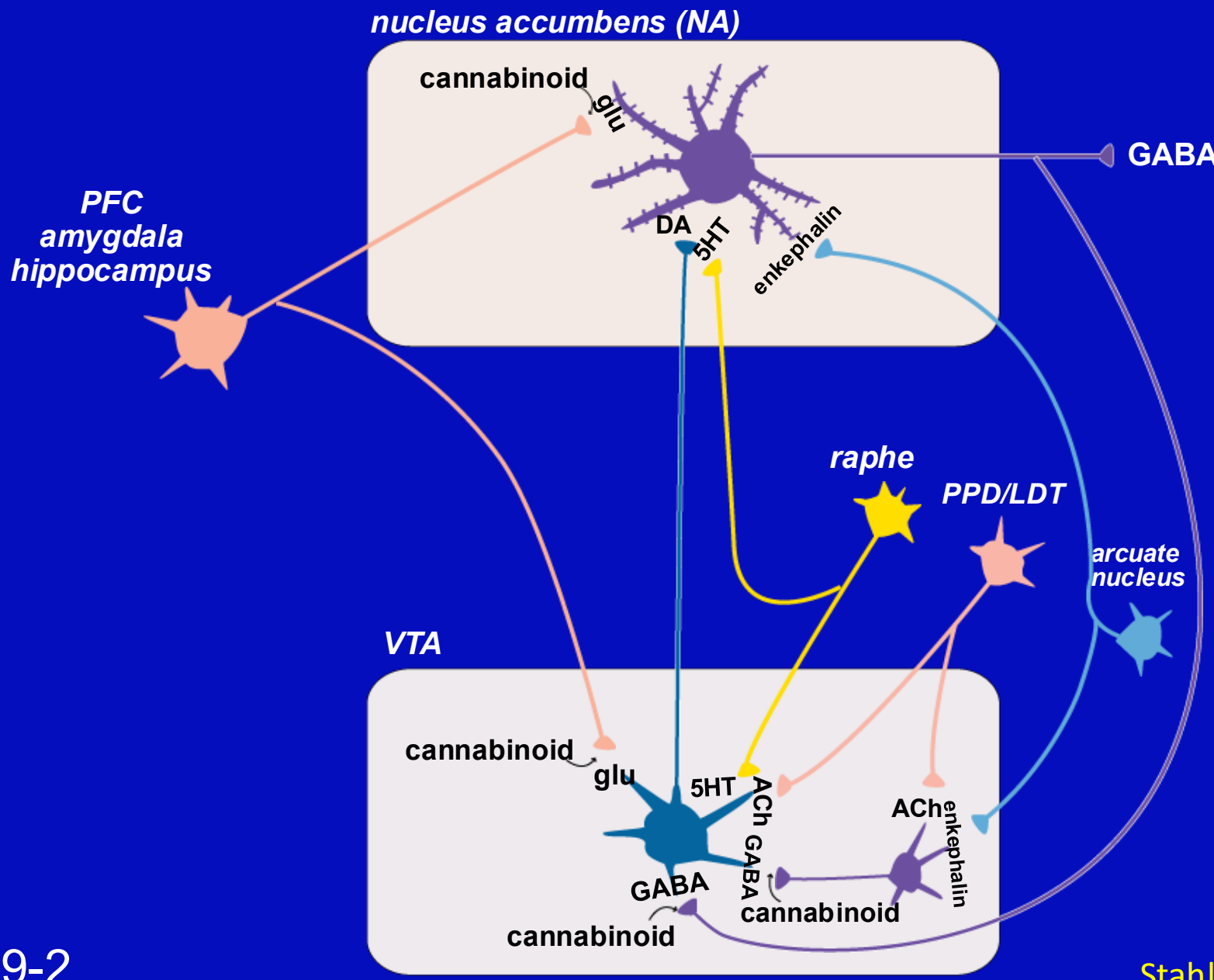
PMID: 28402682 DOI: 10.1080/00952990.2017.1310218

Abstract

Background: The psychoactive indole alkaloid ibogaine has been associated with encouraging treatment outcomes for opioid dependence. The legal status of ibogaine in New Zealand provides a unique opportunity to evaluate durability of treatment outcomes.

> "A single ibogaine treatment reduced opioid withdrawal symptoms and achieved opioid cessation or sustained reduced use in dependent individuals as measured over 12 months." (n=14)

Neurotransmitter Regulation of Mesolimbic Reward



Stahl/NEI, 2008.

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QUESTIONS?

THANK YOU!

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