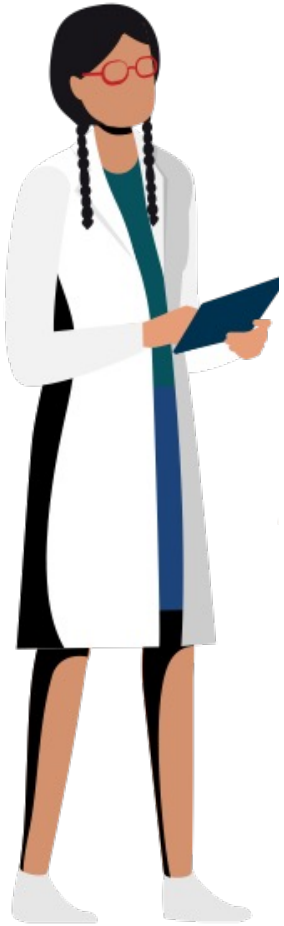
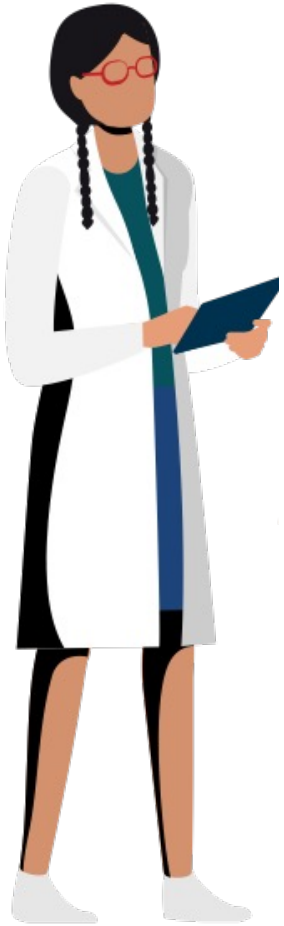
Opioid and Methamphetamine Use Disorders: Diagnosis and Treatment

Objectives



1. Review the diagnostic criteria for substance use disorders
2. Review office-based medications to treat opioid use disorder
3. Discuss interventions to treat methamphetamine use disorder

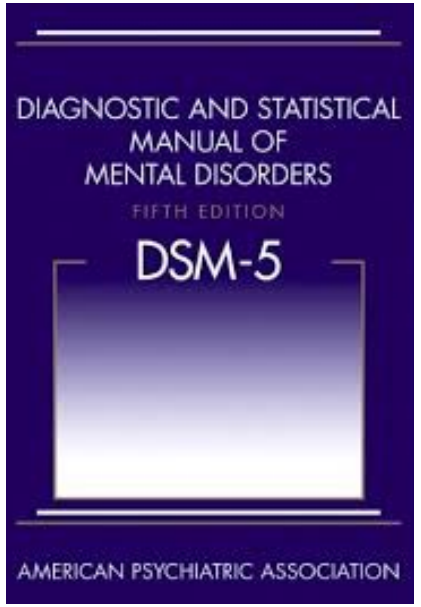
DSM 5



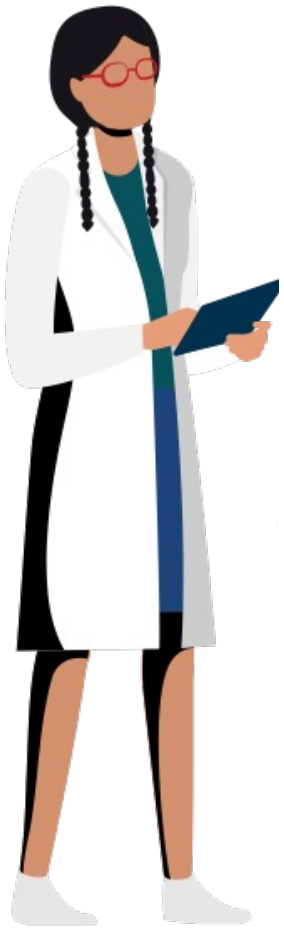
Diagnostic and Statistical Manual of Mental Disorders

11 criteria

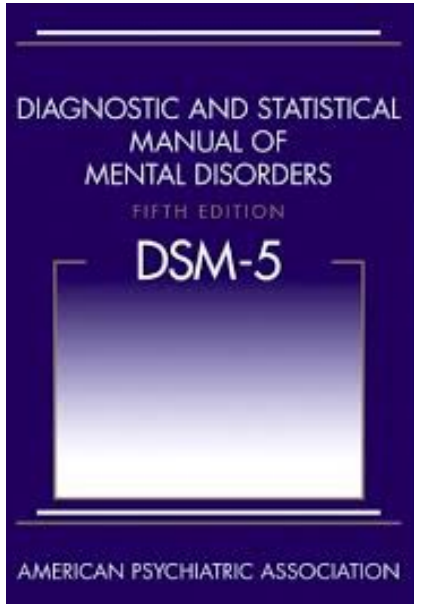
Craving/Compulsion/Consequences/Loss of Control



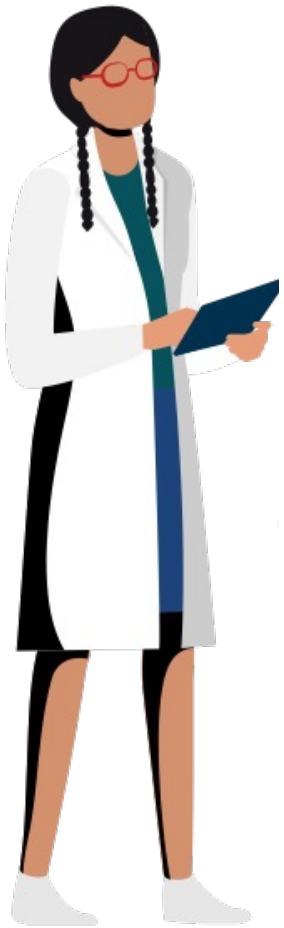
DSM 5: Substance Use Disorder



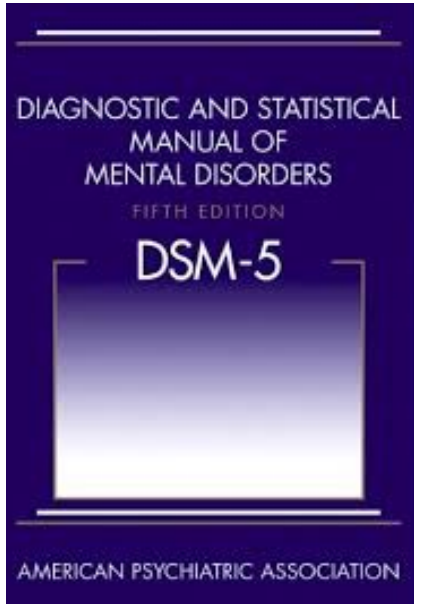
- Taking in larger amounts or for longer than intended
- Unsuccessful efforts to cut down
- Spending a lot of time obtaining the substance
- Craving or a strong desire to use the substance



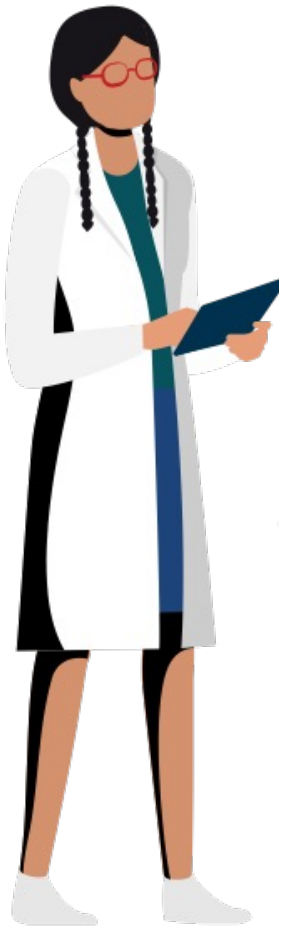
DSM 5: Substance Use Disorder



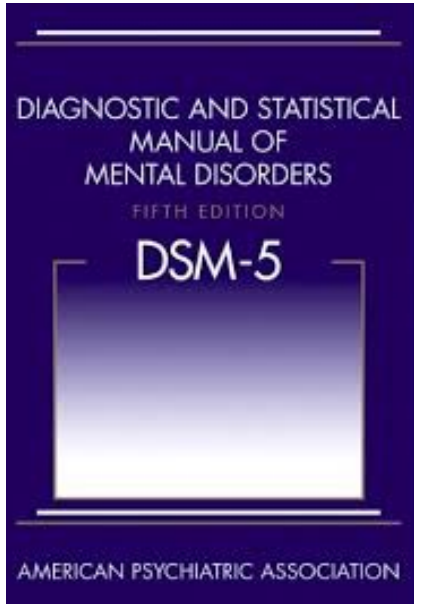
- Continued use despite recurring social or interpersonal problems due to use
- Important activities given up or reduced
- Recurrent use in physically hazardous situations
- Persistent / Recurrent physical or psychological difficulties from use
- Recurrent use resulting in a failure to fulfill major role obligations



DSM 5: Substance Use Disorder



- ☑ Tolerance*
- ☑ Withdrawal*



Substance Use Disorder

2—3

mild disorder

4—5

moderate disorder

6+

severe disorder

Substance Use Disorder

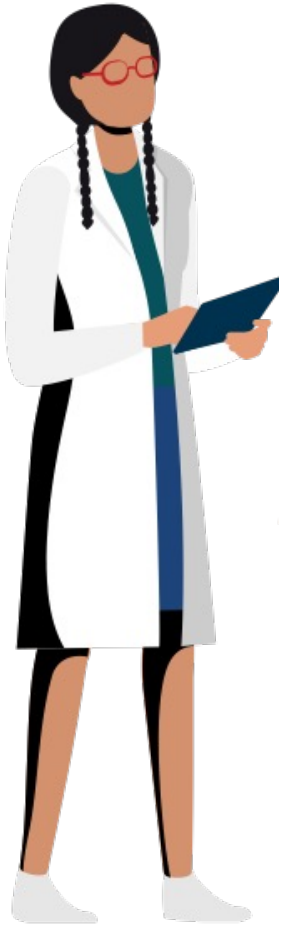
Diagnosis

Label/Accusation

The words we use to describe our patients affects the care they receive

Substance Use Disorder

Objectives



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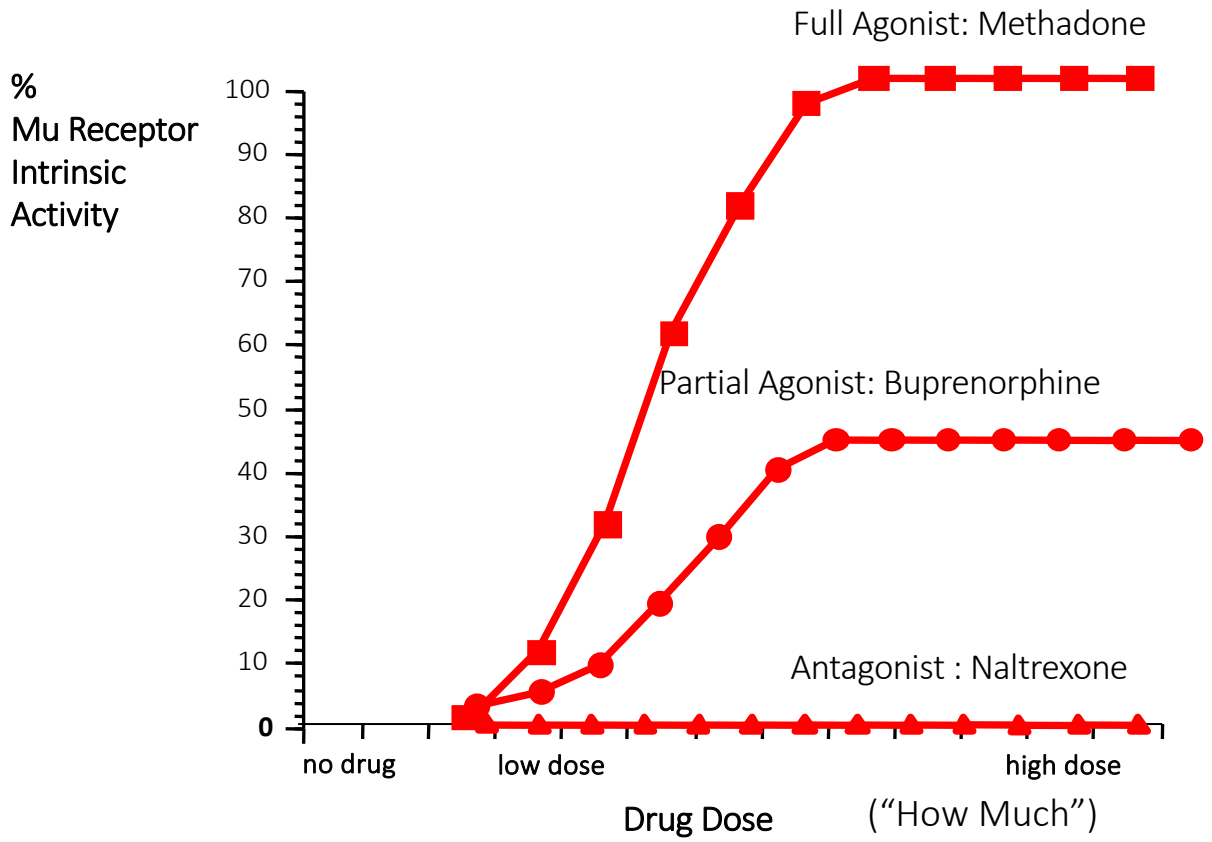
Medications for Opioid Use Disorder (MOUD)

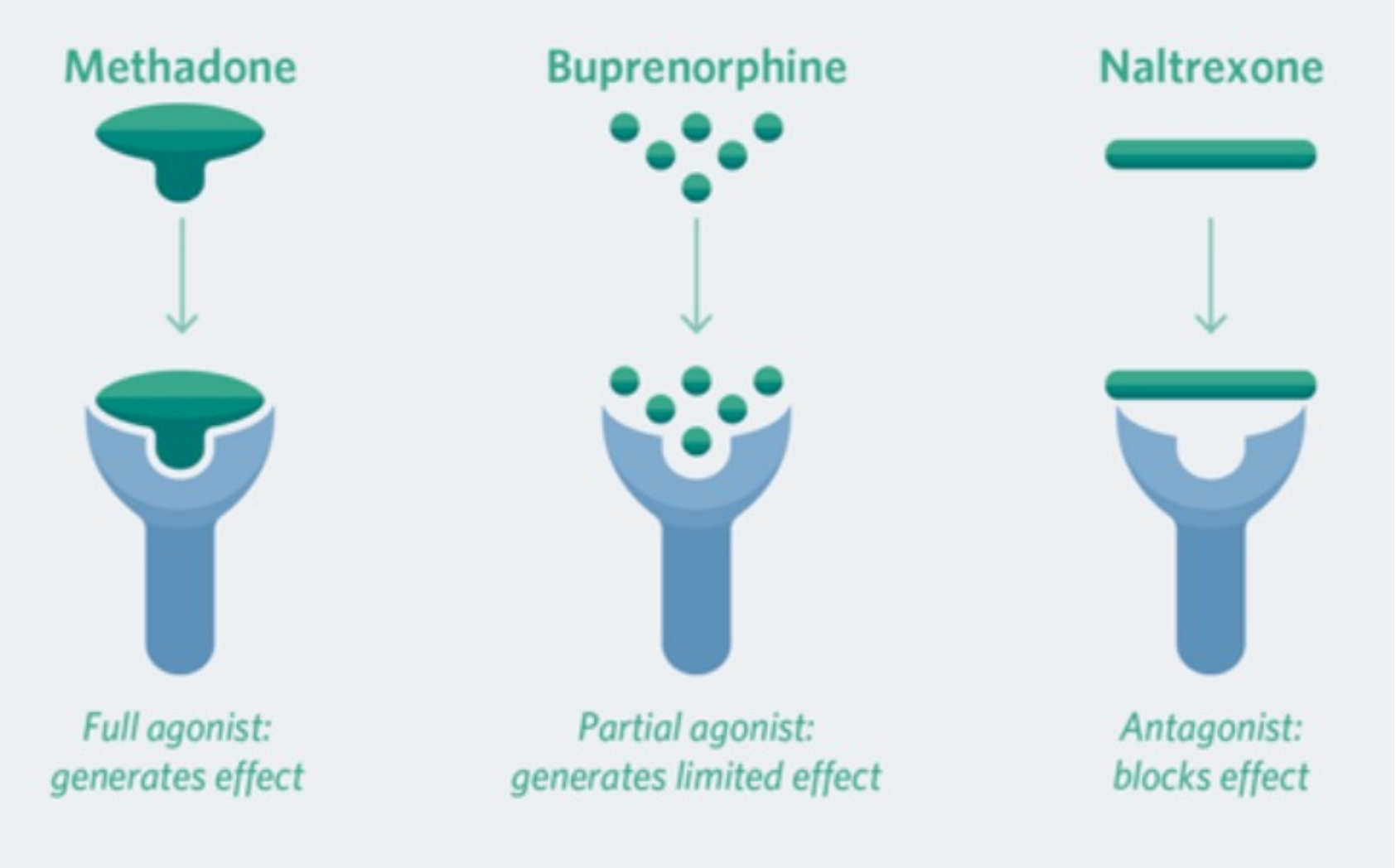
What are they?

Methadone
Buprenorphine
XR- Naltrexone

Pharmacotherapy for Opioid Use Disorder



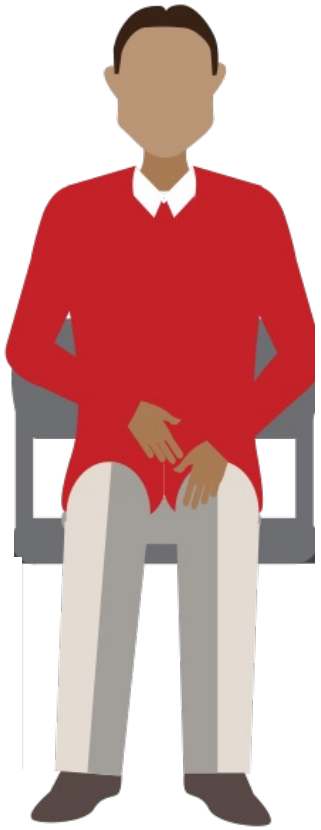
Pharmacotherapy for Opioid Use Disorder



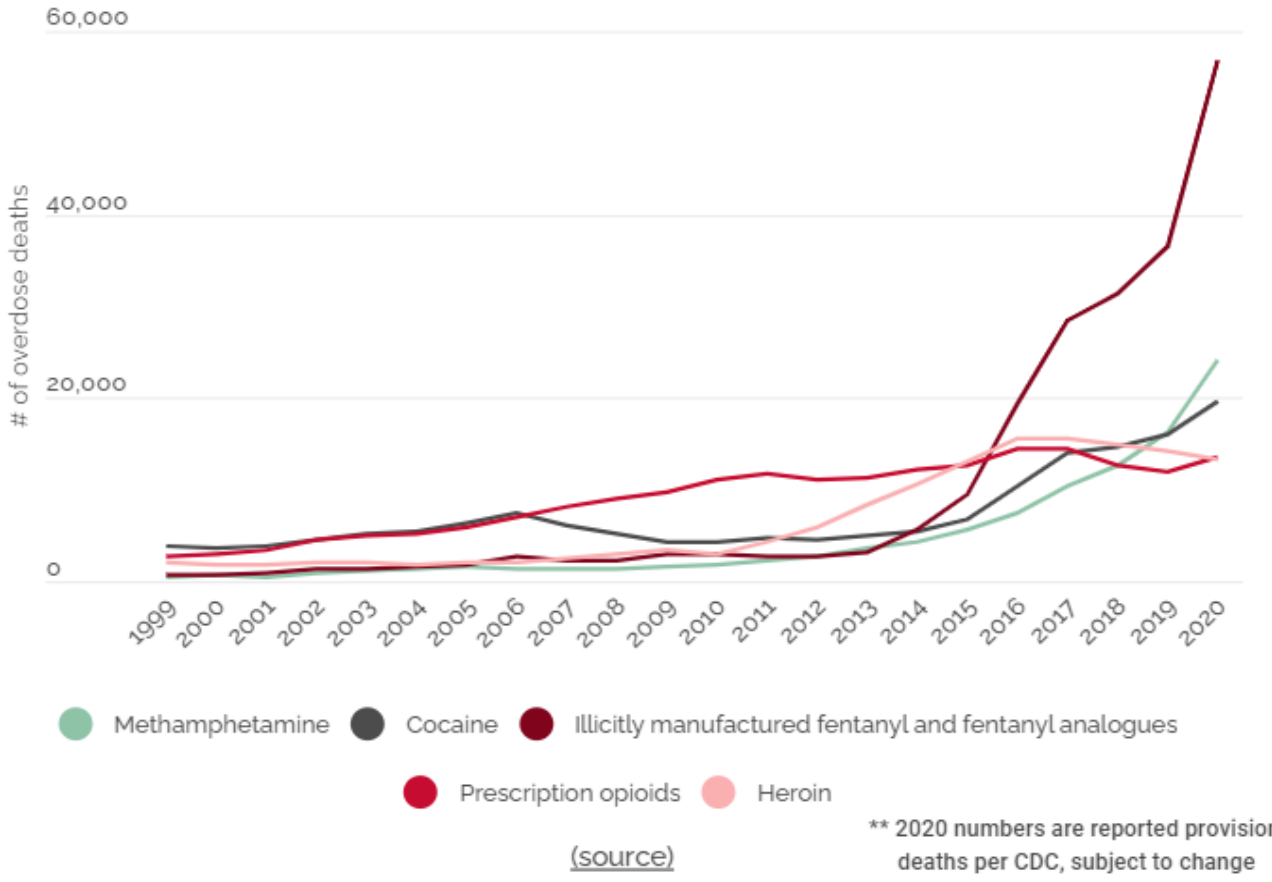
Why do they matter now more than ever?

Fentanyl

Fentanyl



All Overdose Deaths 1999-2020 | Overdose Deaths by Drug 1999-20



(source)

** 2020 numbers are reported provisional deaths per CDC, subject to change

Fentanyl

High affinity and high efficacy at mu receptor

Single use has a short half-life (fast on, fast off)

Repeated use may lead to accumulation in adipose tissue, decreased renal clearance, more mu opioid receptor desensitization

Buprenorphine

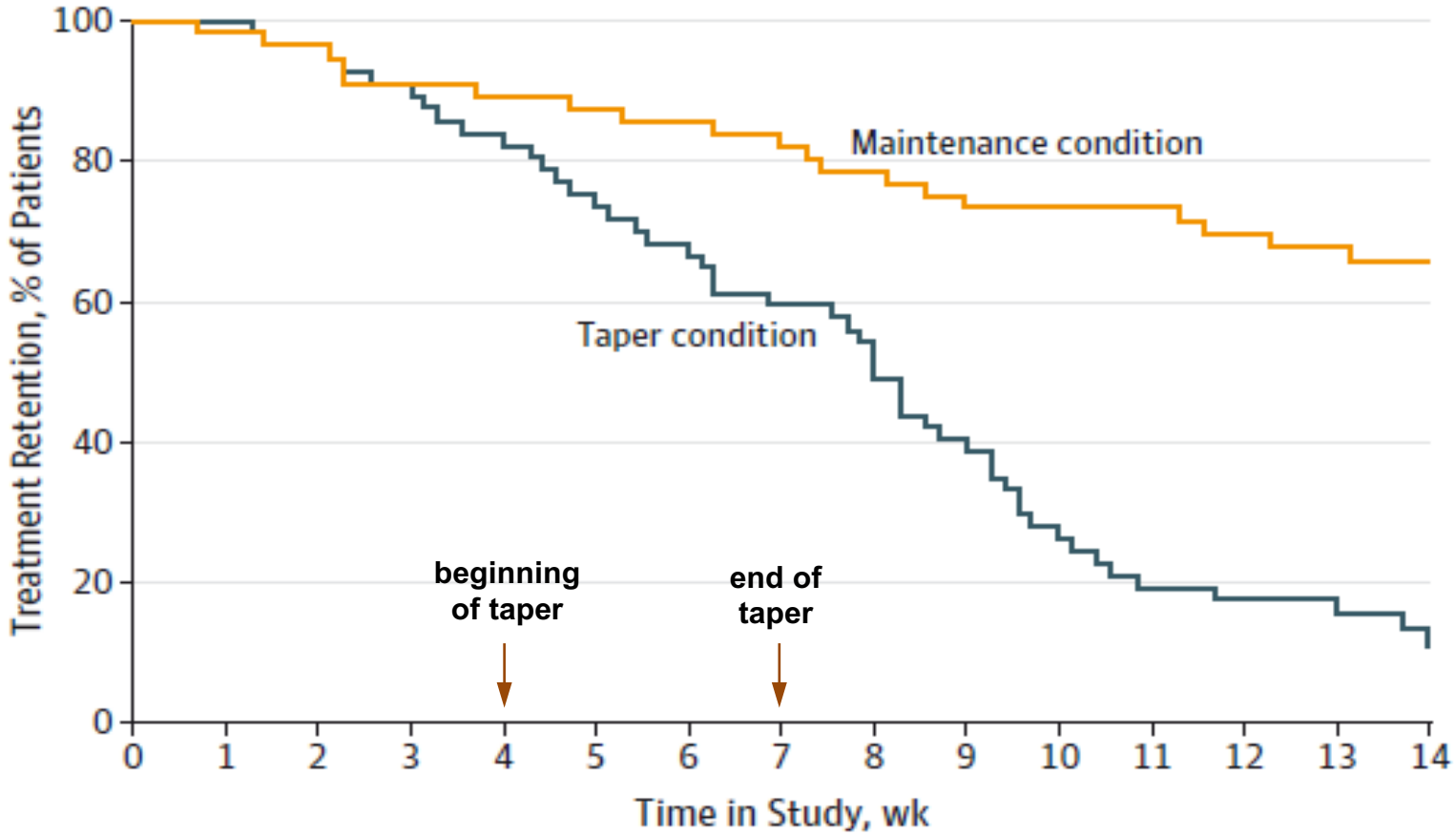
Why is it so great?

It decreases opioid cravings, withdrawal, and use.

Patients taking buprenorphine are significantly more likely to engage and remain in treatment compared to those tapered off the medication.

Fiellen 2014; D’Onofrio 2017

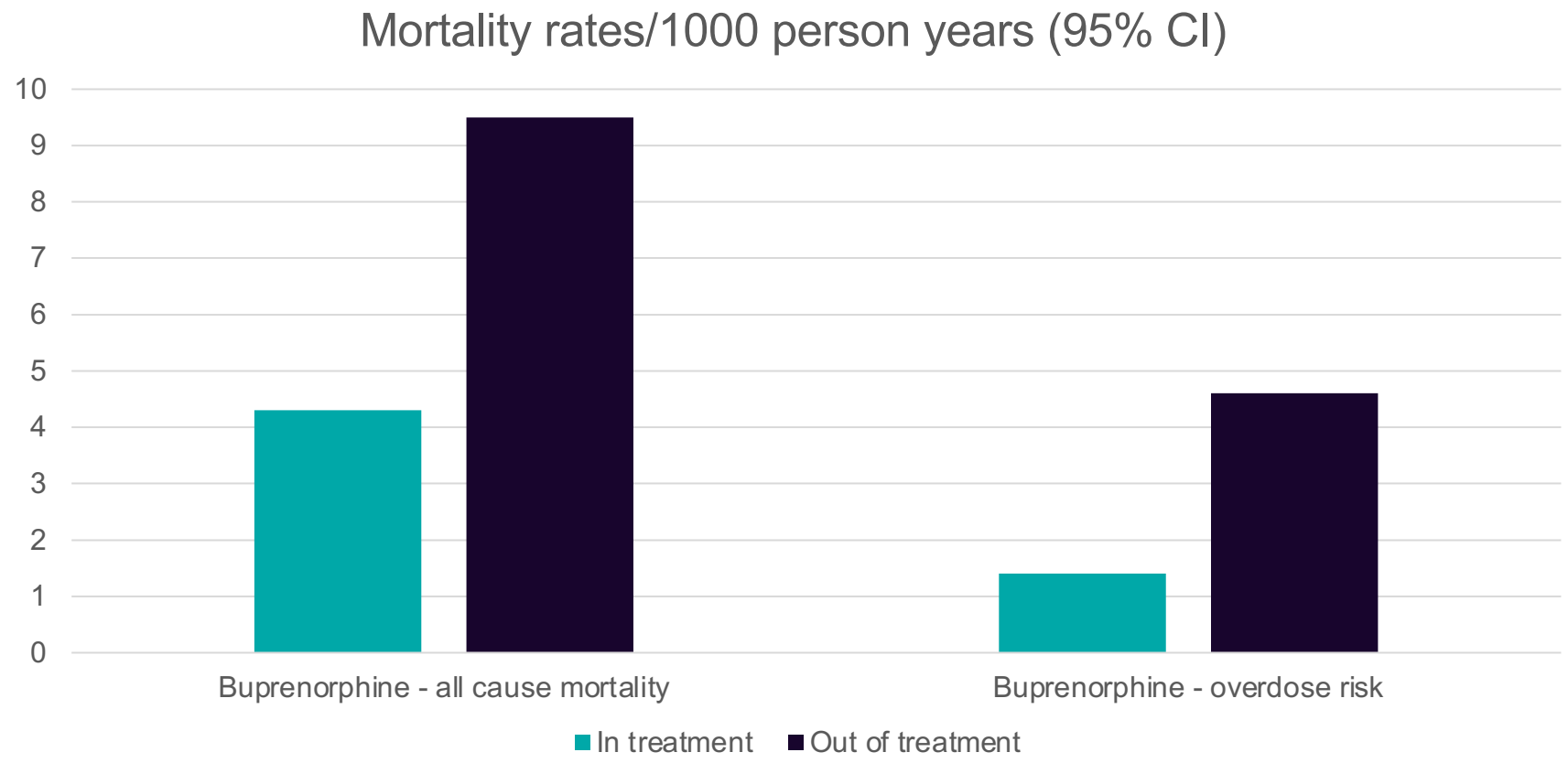
Buprenorphine: Maintenance vs. Taper



Why is it so great?

Most importantly,
people don’t die

Mortality Risk during and after buprenorphine treatment

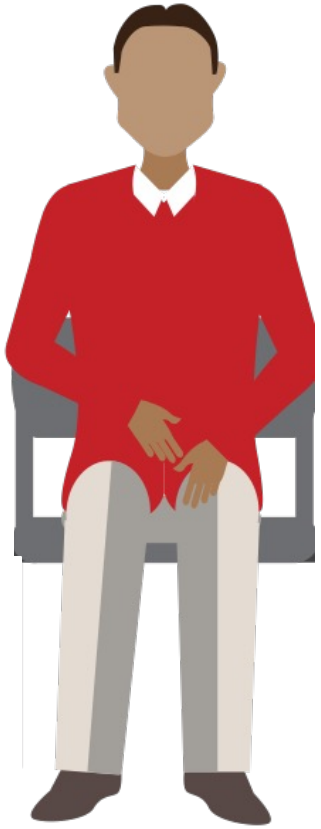


Mortality Risk during and after opioid substitution treatment: systematic review and meta-analysis of cohort studies. Sordo, et al. BMJ 2017.

Important to know:

- Buprenorphine is a high affinity binder at the mu opioid receptors. That means it sits tightly on the receptor.
- It will kick off anything else that's bound there
- But it is a partial agonist at the receptor. That means it doesn't activate the receptor completely.
- If it kicks a full agonist off the receptor, the difference between full agonism and partial agonism is big enough precipitated withdrawal

Available in two primary forms:



1. Buprenorphine monoproduct (Subutex)

2. Buprenorphine/Naloxone (Suboxone)

Buprenorphine/naloxone may reduce misuse

- Buprenorphine is taken sublingually
- Naloxone is absorbed in minute amounts sublingually.
- It is essentially inactive (in most people) unless injected
- Decreased risk of misuse (controversial)

2mg/0.5mg

8mg/2mg

New kid in town: buprenorphine XR (Sublocade)

Approved November 2017

Single injection lasts one month

Haight et al The Lancet 2019

How to administer and prescribe

“Traditional” inductions

- Instruct the patient to abstain from any opioid use for a minimum of:
  - 12-16 hours for short-acting opioids
  - 24 hours for sustained-release opioid medications
  - 36 hours for methadone or fentanyl
- Observe and document mild to moderate withdrawal

“Traditional” inductions

Wait until patient is in mild to moderate withdrawal (which means receptors are empty)

Begin buprenorphine and titrate up, as needed, over 3-4 days

How do you know if a patient is in sufficient enough withdrawal to begin buprenorphine?

Clinical Opiate Withdrawal Scale (COWS)

Clinical Opiate Withdrawal Scale

For each item, circle the number that best describes the patient's signs or symptom. Rate on just the apparent relationship to opiate withdrawal. For example, if heart rate is increased because the patient was jogging just prior to assessment, the increase pulse rate would not add to the score.

Patient's Name:_____ Date and Time _____/_____/_____:_____

Reason for this assessment:_____

Resting Pulse Rate: ___ ___beats/minute *Measured after patient is sitting or lying for one minute* 0 pulse rate 80 or below 1 pulse rate 81-100 2 pulse rate 101-120 4 pulse rate greater than 120	**GI Upset:** *over last ½ hour* 0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 Multiple episodes of diarrhea or vomiting
Sweating: *over past ½ hour not accounted for by room temperature or patient activity.* 0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face	**Tremor** *observation of outstretched hands* 0 No tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching
Restlessness *Observation during assessment* 0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 Unable to sit still for more than a few seconds	**Yawning** *Observation during assessment* 0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute
Pupil size 0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible	**Anxiety or Irritability** 0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable anxious 4 patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches *If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored* 0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/ muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort	**Gooseflesh skin** 0 skin is smooth 3 piloerrection of skin can be felt or hairs standing up on arms 5 prominent piloerrection
Runny nose or tearing *Not accounted for by cold symptoms or allergies* 0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks	Total Score _____ The total score is the sum of all 11 items Initials of person completing Assessment: _____

Score: 5-12 = mild; 13-24 = moderate; 25-36 = moderately severe; more than 36 = severe withdrawal

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Clinical Opiate Withdrawal Scale (COWS)

- Resting pulse rate
- Sweating/chills
- Restlessness
- Pupil size
- Bone or joint aches
- Runny nose
- GI upset
- Tremor
- Yawning
- Anxiety or irritability
- Goose bumps

- **Guides timing of first dose of buprenorphine**

Traditional induction

Begin buprenorphine with COWS is 10-12

Prepare for Discomfort

- Acetaminophen and ibuprofen
- Clonidine
- Hydroxyzine
- Trazodone
- Tizanidine or Methocarbamol
- Ondansetron
- Bismuth or Loperamide

Srivastara, 2020; Kosten, 2019; Kuszmaul 2020; Kheirabadi 2008 ;Salehi 2011; Sanders 2013

Dosing Schedule

	Suggested dosing pills or heroin	Suggested dosing fentanyl
Day 1	2-4mg (wait 45 min) + 4mg if needed	8-16mg
Day 2	Day 1 dose + 4mg if needed (single dose)	16-20mg
Day 3	Day 2 dose + 4mg if needed (single dose)	20-24mg
Day 3-28	Adjust as needed	24mg

Precipitated Withdrawal

If opioid withdrawal appears shortly after the first dose buprenorphine may have precipitated a withdrawal syndrome

Precipitated Withdrawal

Greatest severity of buprenorphine-related precipitated withdrawal in the first few hours (1-4) after a dose

Challenges with Traditional Induction

- Patient must experience withdrawal, which is difficult
- With fentanyl, sometimes need to wait even longer than 3 days because fentanyl sticks around in the fat
- Always possible that patient will experience precipitated withdrawal

Another option...

ninja clipart PNG Designed By 588ku from https://pngtree.com/freepng/sneak-attack-sneak-attack-man-in-black-black-man-ninja_3931511.html?sol=downref&id=bef

Low dose buprenorphine induction

- Many different protocols
  - Initial protocol “Bernese Method”
  - Usually start at 0.5 mg
  - Often 7-10 days
  - No universally accepted regimen
  - Can continue full agonists throughout the entire induction

Day	Dose
1	0.5 mg daily
2	0.5 mg bid
3	1 mg bid
4	2 mg bid
5	4 mg bid
6	4 mg tid
7	8 mg tid

Adapted from Yale protocol

[9]Opioid Use Disorder Practice Update (2022)
British Columbia Centre on Substance Use

Rapid low dose inductions

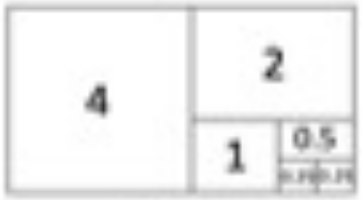
Day	Full Opioid Agonist	Buprenorphine Dosing Instructions	Total Daily Dose of Buprenorphine
1	Continue	0.5 mg SL once	0.5 mg
2	Continue	0.5 mg SL bid	1 mg
3	Continue	1 mg SL bid	2 mg
4	Continue	2 mg SL bid	4 mg
5	STOP (if able to tolerate increase)	4 mg SL once. If tolerated take additional 4 mg in 10 mins. Continue to titrate prn for ongoing cravings or withdrawal symptoms for TDD of 16-24 mg	16-24 mg

Tips and Tricks

Good patient instructions are helpful. Consider visual aids

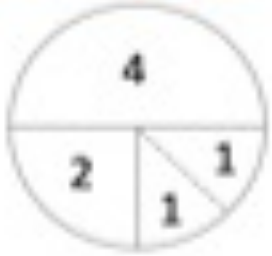
Micro-dosing is a way to start Buprenorphine without getting sick.

You can micro-dose with Suboxone or Subutex.



Strip: 8 mg

Strip: 2 mg



Tab: 8 mg

Tab: 2 mg

Standard Plan	Dose	Stop Heroin Day	Notes
Day 1	0.5		
Day 2	0.5 + 0.5		
Day 3	1 + 1		
Day 4	2 + 2		
Day 5	3 + 3		
Day 6	4 + 4	X	
Day 7	8 + 4 + 4		

Personal Plan	Dose	Stop Heroin Day	Notes
Day ____			
Day ____			
Day ____			
Day ____			
Day ____			
Day ____			
Day ____			
Day ____			
Day ____			

Tips and Tricks

- Specifically outline what adjunct meds you are giving and for what
- Instruct patients to take AM buprenorphine before their full agonist

Tips and Tricks

- Close follow up
- Modify or slow protocol as needed (i.e. repeat days)
- Give naloxone to every patient

Maintenance

- Continue patient at the dose at which they have no withdrawal symptoms and minimal to no cravings
- The maximum effective dose has long been considered 24mg
- However, with fentanyl, many patients continue to have cravings and withdrawal symptoms at typical doses (16-24 mg)
- It is becoming more common to **up titrate** to 28-32 mg which seems to be helpful for some patients

Regulations and Regulatory Changes

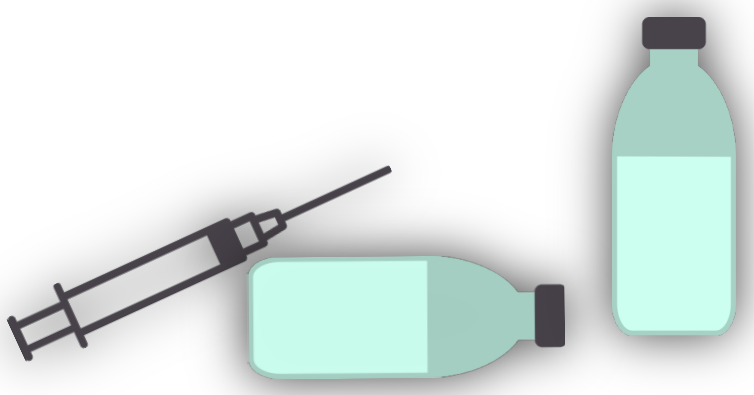
Buprenorphine approved by the FDA in 2002. Prescribers were required to undergo an 8 -our training, register with the DEA, obtain an “X-waiver” and could only prescribe to 30 patients at a time

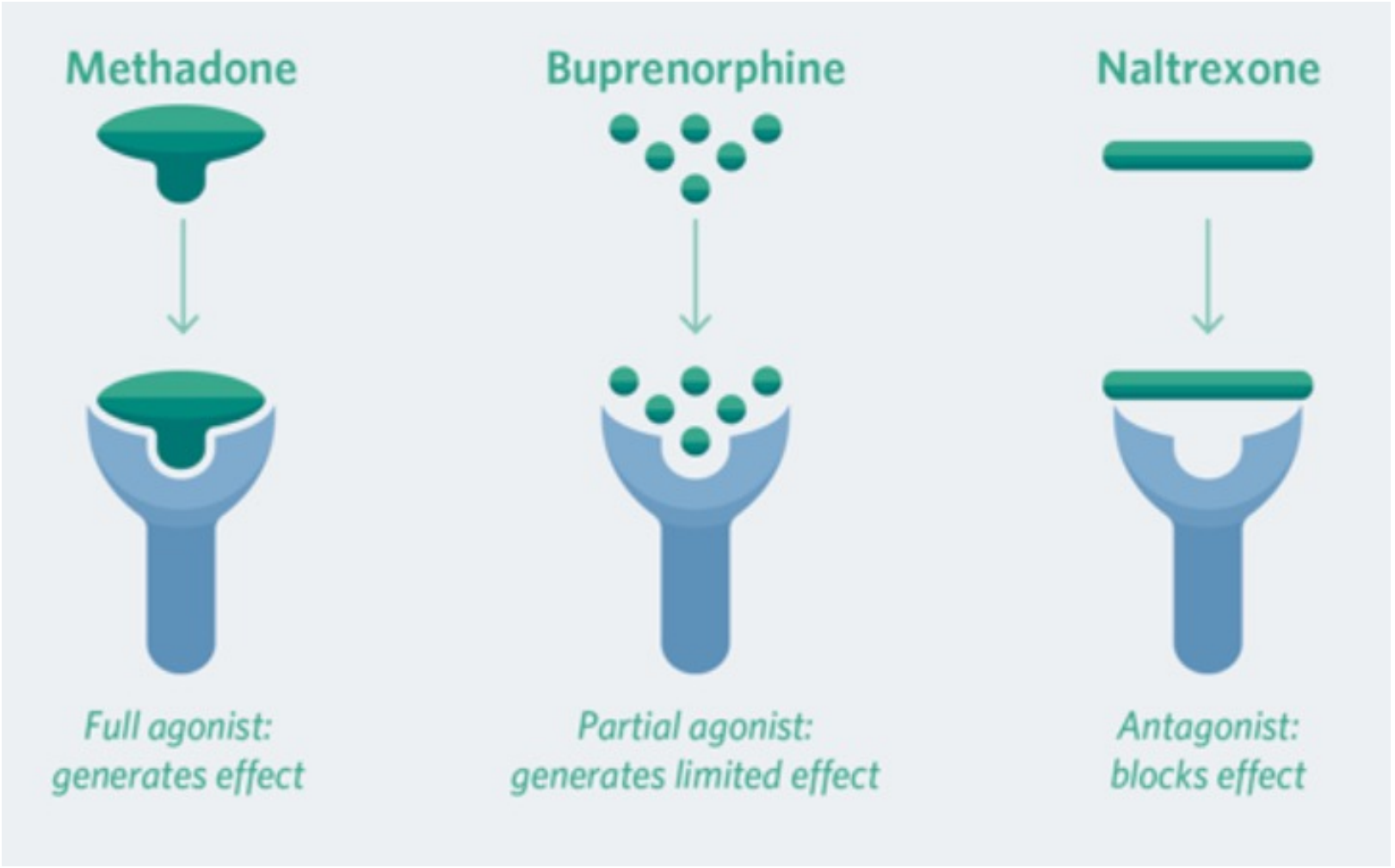
2016 NPs and PAs were allowed to prescribe, but with a longer training requirement. Still required to obtain X waiver and register with the DEA and limit patients

Training requirement removed in 2021, though prescribers still needed to obtain the waiver and register with the DEA

Jan 2023 all buprenorphine specific DEA requirements were removed

Naltrexone for Extended Release Injectable Suspension




Methadone
Buprenorphine
Naltrexone
Full agonist:
generates effect
Partial agonist:
generates limited effect
Antagonist:
blocks effect

Outcome	XR-NXT (n=283)	BUP-NX (n-287)	Treatment Effect
Inducted to study medication (ITT)	204 (72%)	270 (94%)	OR 0.16, 0.09-0.28; P<0.0001
Relapse-free survival (weeks)	8.4 (3-23.4)	14.4 (5.1-23.4)	HR 1.36, 1.10-1.68; p=0.0040
	20.4 (5.4-23.4)	15.2 (5.7-23.4)	HR 0.92, 0.71-1.18 p=0.49
Opioid relapse, weeks 3-24	185 (65%)	163 (57%)	OR 1.44, 1.02-2.01; p=0.036
	106/204 (52%)	150/270 (56%)	OR 0.87, 0.60-1.25 p=0.44

Lee JD, et al. *Lancet* 2017

Difficult to start

Requires abstinence from opioids 4 – 7 days

About 25% of patients will not complete induction

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Lee JD, et al. *Lancet* 2017

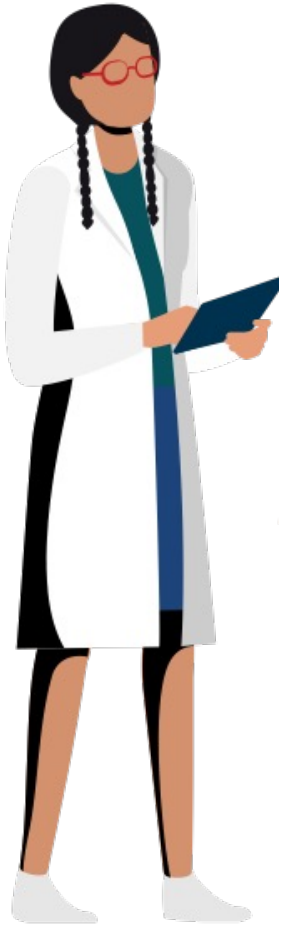
Overdose data

- Original findings
  - more overdoses in the XR-NTX arm, but not statistically significant
- Re-analysis
  - Researchers had missed cases of overdose
  - 28 overdoses in XR-NTX arm
  - 2.4 x greater hazard of overdose compared to bup/nal

Summary

- Opioid use disorder can be treated in an outpatient setting
- Buprenorphine saves lives
- Please prescribe

Objectives



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Methamphetamine Use Disorder

Crystal Methamphetamine

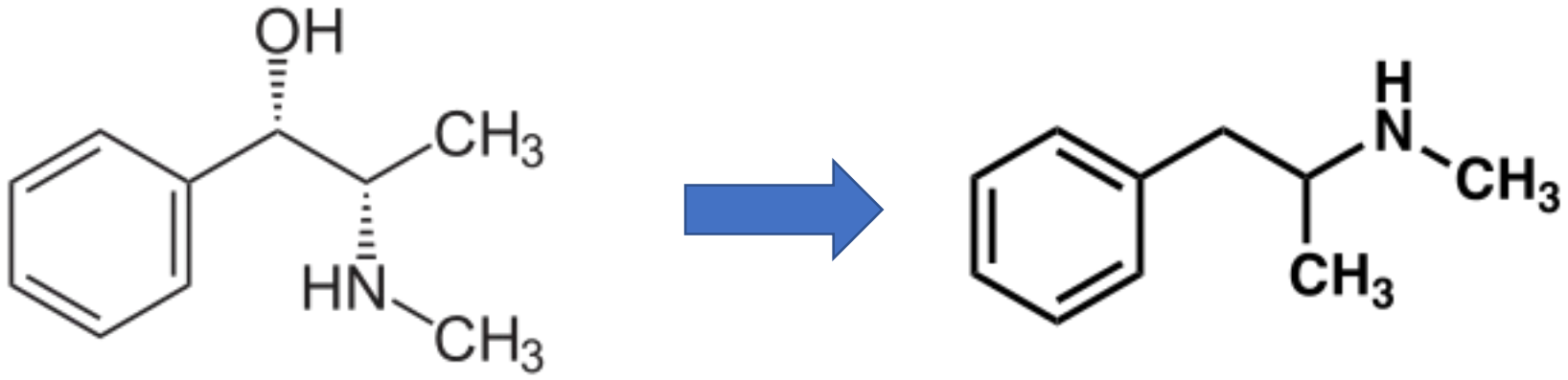
- Form of d-methamphetamine
- Closely related to amphetamine
- Longer lasting and more toxic to the CNS

Crystal Methamphetamine

Crystal Methamphetamine

Crystal Methamphetamine

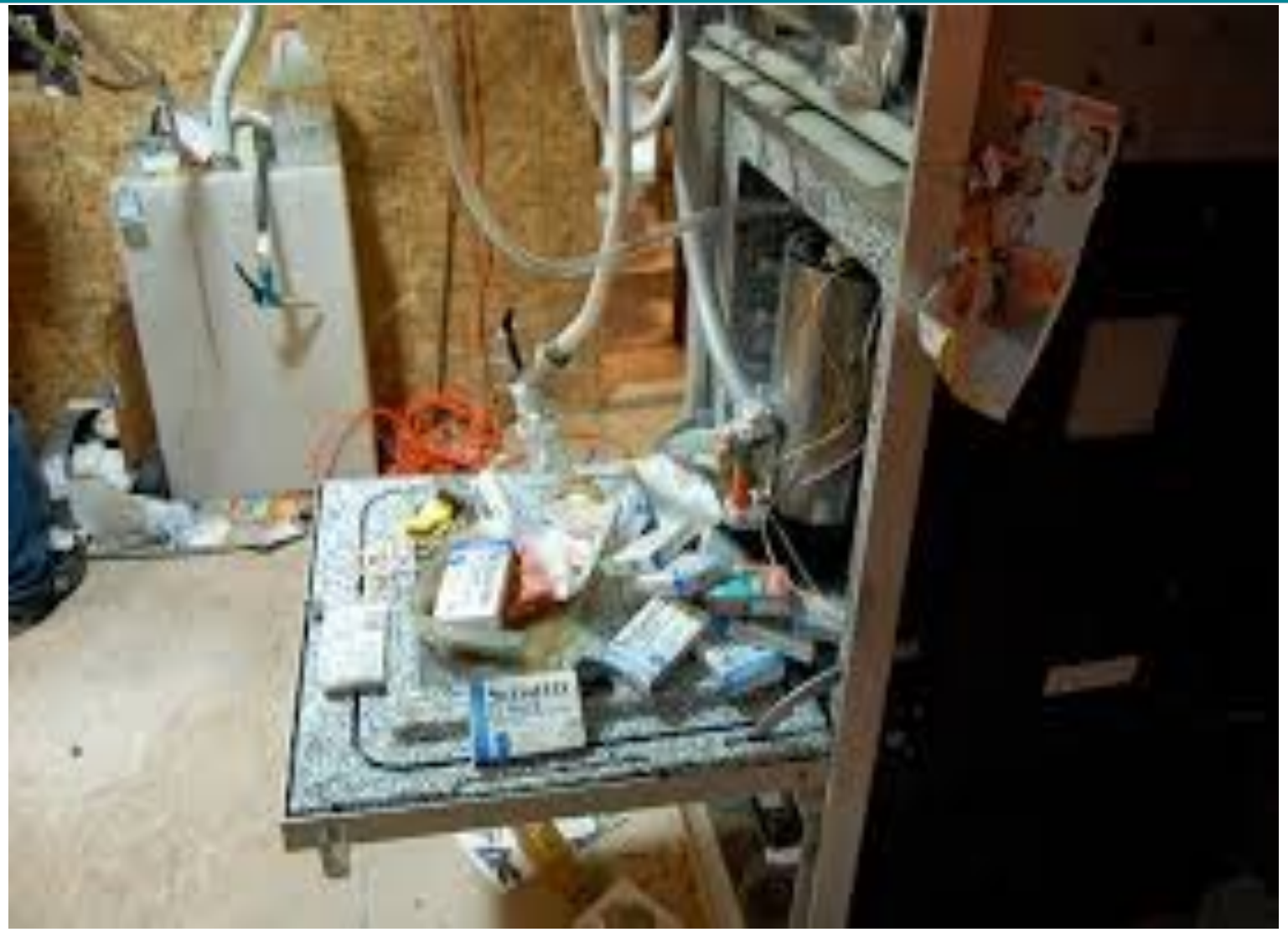
Crystal Methamphetamine



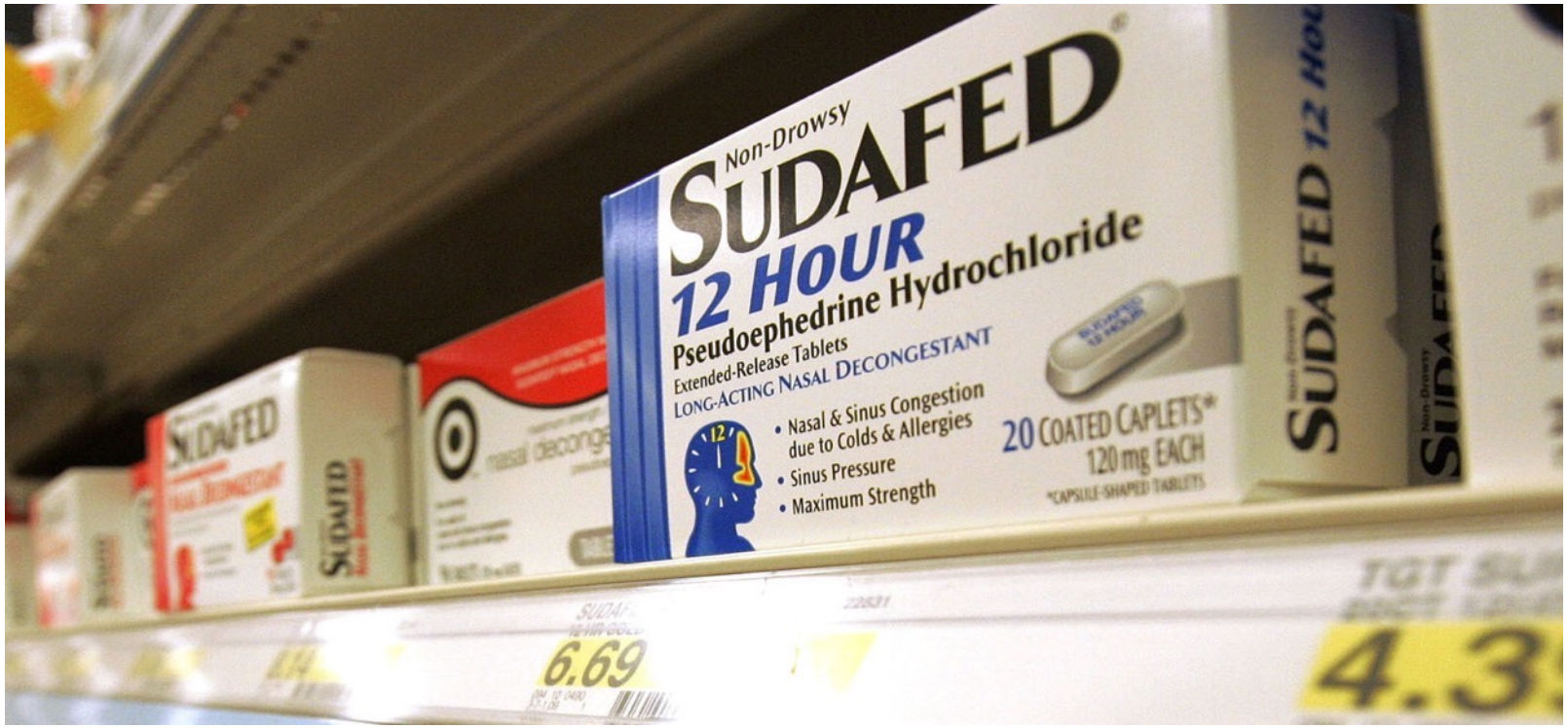
Crystal Methamphetamine

```
Materials:
-------------------------------------------------------------------------------
1 2 Liter Bottle (with cap)
1 1 Liter Bottle (get 2 caps for it)
1 20 oz. Bottle (with cap)
1 Quart Jar
2 ft. 1/4in. diameter rubber/plastic hose (aquarium hose works good)
Coffee Filters
1 Funnel
1 Tubing Cutter (go to Home Depot)
2 Plyers
1 Roll of Ductape or Electrical Tape 1 Blender or Food Processor

200 60mg Pseudophedrine HCL pills (Actifed, Sudafed, Suphedrine, etc.)
1 1/2 cups Ammonium Nitrate fertilizer (33-0-0)
3 cans starting fluid
3 AA Energizer Lithuim Batteries
1 bottle Red Devil brand Lye
2 caps of water (use the top off the 2 liter)
1 box Iodized Salt
1 bottle Liquid Fire brand drain opener


Procedure:
-------------------------------------------------------------------------------
1) Rinse and dry out all of your bottles. Be sure to get ALL of the
moisture out. Don't go any further until they are completely dry.
2) Put your pills into the blender or food processor and grind them
into powder. Mix them in with the 1 1/2 cups of Ammoniun Nitrate
fertilizer. Use the funnel to pour the mixture into the 2 liter
```

Crystal Methamphetamine



2005: CMEA (Combat Methamphetamine Epidemic Act)

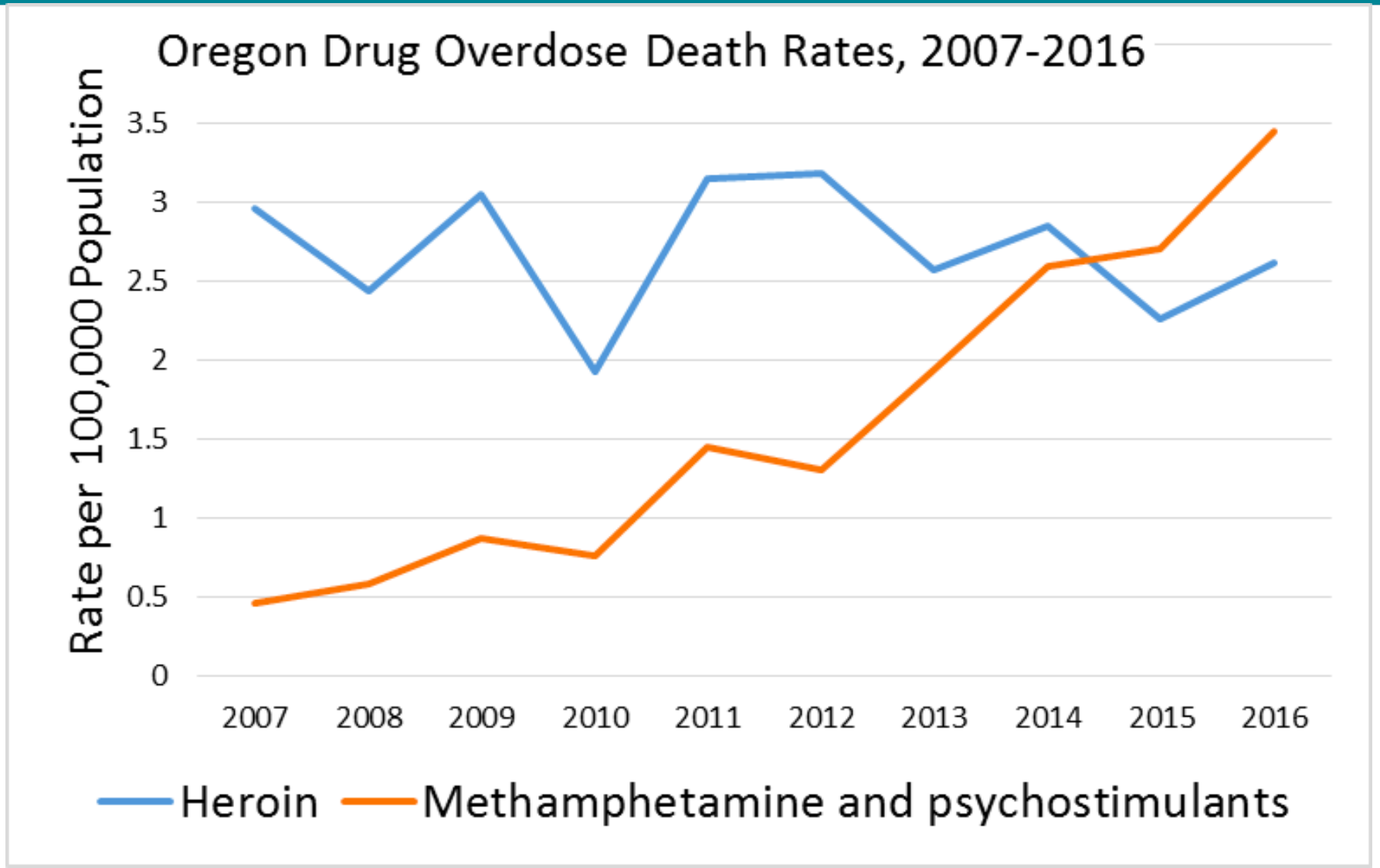


Result?

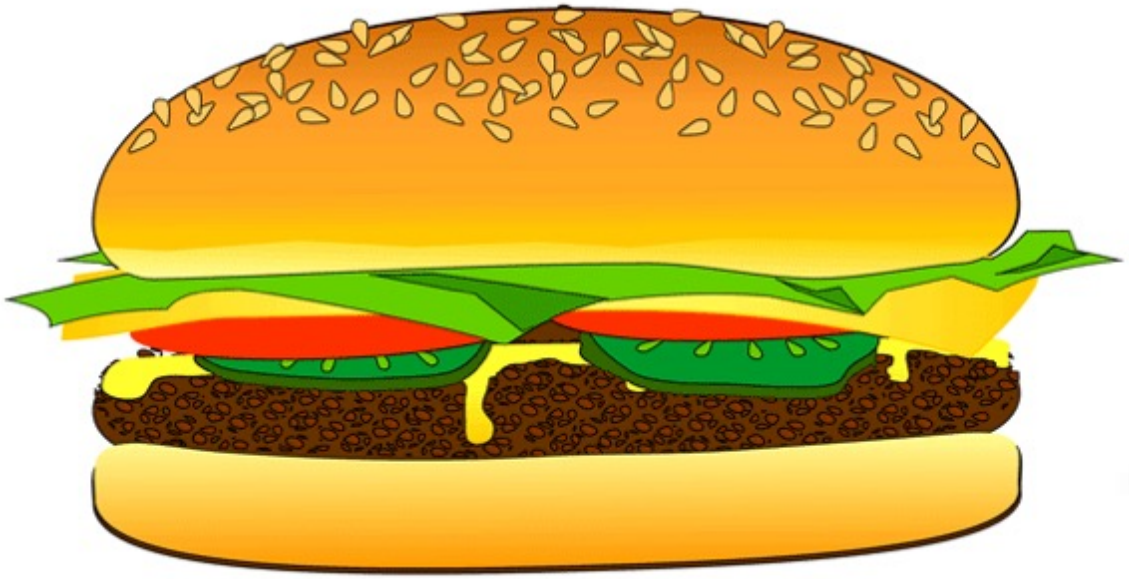
In Oregon, from 2004 to 2011, methamphetamine lab incidents decreased from an average of 24 per month to less than one per month

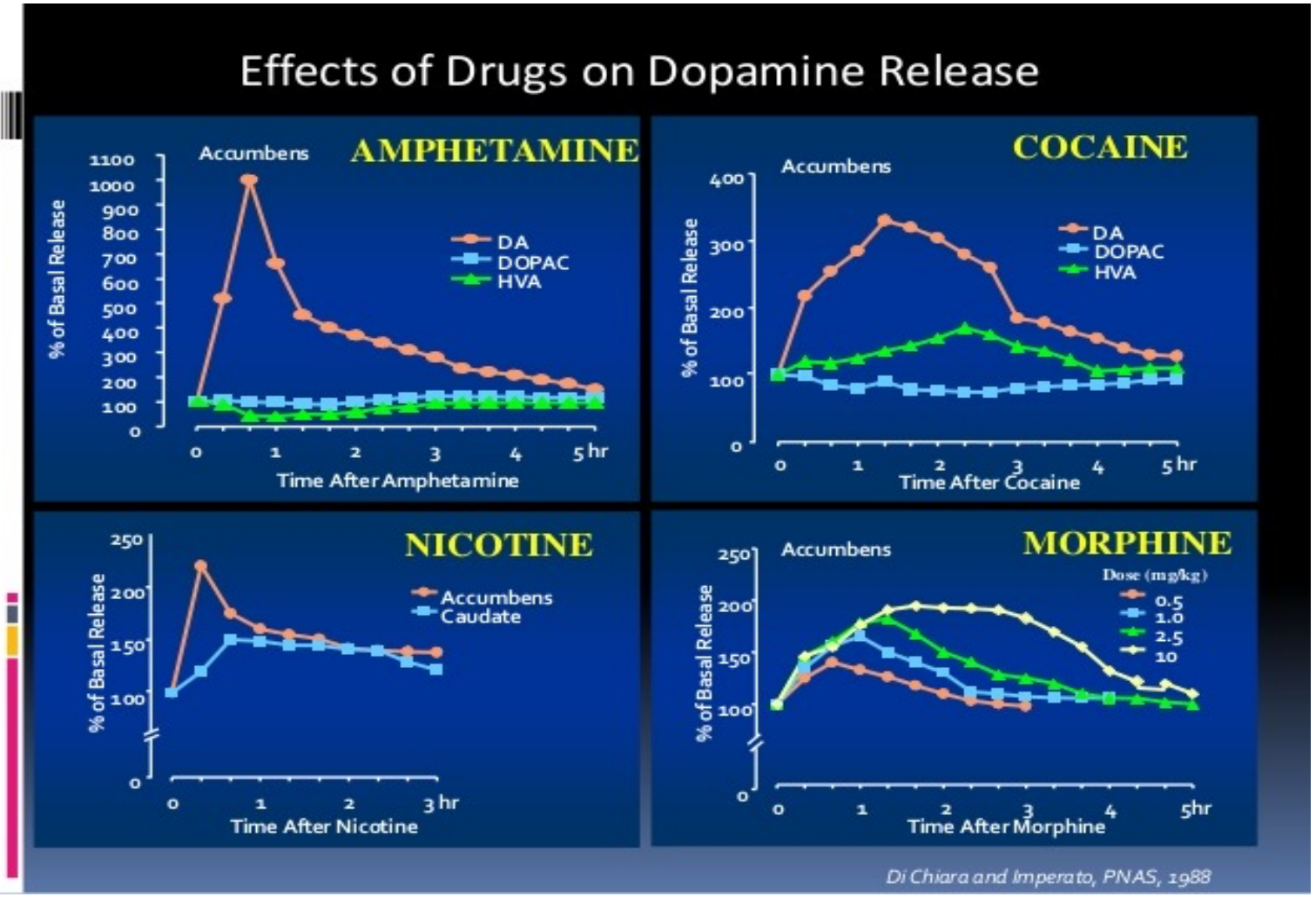
http://www.oregondec.org/pse.htm

And Yet…


Oregon Drug Overdose Death Rates, 2007-2016
Rate per 100,000 Population
3.5
3
2.5
2
1.5
1
0.5
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Heroin
Methamphetamine and psychostimulants

Increase dopamine to +/- 200 times basal output





Di Chiara and Imperato, 1988

Medical Issues Related to Methamphetamine Use

Neurotoxicity, cognitive effects

- Excessive DA damaging cell structures
- Disruption of blood-barrier
- Use associated with poorer performance on motor and processing tasks, visual and verbal fluency
- More than 2/3 of those with MUD show cognitive impairment
- May limit ability to follow through with treatment, understand advice, and achieve treatment outcomes

Paulus and Stewart, JAMA Psychiatry, 2020

Medical Issues Related to Methamphetamine Use

Cardiovascular and cerebrovascular

- Leading cause of death with MUD
- Strokes more common in young men (hemorrhagic)
- Also associated with pulmonary htn, cardiac arrhythmia, cardiomyopathy

Lappin et al., 2017

Two evidence-based behavioral interventions: contingency management and harm reduction

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Review

Non-pharmacological interventions for methamphetamine use disorder: a systematic review

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ARTICLE INFO

Keywords:
Methamphetamine
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Non-pharmacological interventions
abstinence

ABSTRACT

Background: Methamphetamine (METH) use is on the rise globally, with the number of treatment seekers increasing exponentially across the globe. Evidence-based therapies are needed to meet rising treatment needs. This systematic review intends to appraise the existing evidence to identify effective non-pharmaceutical approaches for the treatment of METH use disorder.

Methods: Five electronic bibliographic databases-Ovid (Medline), Embase, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Web of Science and PsycINFO- were searched to identify relevant studies that were published between January 1995 to February 2020. Studies were selected and assessed by two independent reviewers. A systematic review of data from both randomised control trials (RCT) and non-RCTs was conducted to appraise the evidence.

Results: A total of 44 studies were included in the review. Behavioural interventions, i.e. cognitive behavioural therapy (CBT), contingency management (CM), exercise, residential rehabilitation based therapies, repetitive transcranial magnetic stimulation (rTMS), and matrix model demonstrated treatment efficacy in promoting abstinence, reducing methamphetamine use or craving in the participants. While CM interventions showed the strongest evidence favouring the outcomes assessed, tailored CBT alone or with CM was also effective in the target population.

Conclusions: Behavioural interventions should be considered as the first line of treatment for methamphetamine use disorder. Future studies should address the longevity of the effects, and limitations due to smaller sample sizes and high dropout rates to enable better assessment of evidence.

1. INTRODUCTION

Illicit amphetamine use has grown steadily over the last two decades with almost 28.9 million people using amphetamine type stimulants (ATS, amphetamine, methamphetamine, methylene dioxy methamphetamine and other designer amphetamines) in 2017 (United Nations Office on Drugs and Crime, 2019), with methamphetamine (METH) being the most frequently used and potent drug in the ATS family (Perez-mana et al., 2013). The overdose deaths involving METH tripled from 2011 to 2016 with a 29% increase per year (Hedegaard et al., 2018). METH is the fourth leading cause of drug overdose deaths in the US, accounting for 10.6% of deaths in 2016, 49.8% of which involved concomitant use of another drug(s) with heroin (21.8%), fentanyl (11.1%), and cocaine (8.3%) being the top 3 concomitant drugs . A recent cross-sectional study among a million patients showed a 486.7% increase in METH positive urine from 2013 to 2019 in the US (Twillman et al., 2020), which suggests another impending drug epidemic.

Amphetamine abuse is often accompanied by physical (e.g., bloodborne diseases, Farrell et al., 2019) or psychological co-morbidities (Akindipe et al., 2014). Recent reports highlight the rapid increase in treatment-seeking amphetamine dependents that suggests an emerging global health challenge. In the US, amphetamine-related hospitalisation is the fourth most common drug-related hospitalisation after alcohol, opiates, and cannabis (National Admission to Substance Abuse Treatment Services, 2016). A cross-sectional study conducted using national hospital discharge data showed that amphetamine-related admissions increased steeply between 2008 to 2015 in the US. Mean in-hospital mortality was higher for amphetamine abuse than for any other substance abuse. The annual hospital-related cost for amphetamine abuse increased steadily from $436 million in 2003 to $2.17 billion in 2015 (Winkelman et al., 2018).

Despite being the second most common illicit drug abused worldwide (United Nations Office on Drugs and Crime, 2017), no approved

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RESEARCH ARTICLE

Comparative efficacy and acceptability of psychosocial interventions for individuals with cocaine and amphetamine addiction: A systematic review and network meta-analysis

Franco De Crescenzo, Marco Ciabattini, Gian Loreto D'Alò, Riccardo De Giorgi, Cinzia Del Giovane, Carolina Cassar, Luigi Janiri, Nicolas Clark, Michael Joshua Ostacher, Andrea Cipriani

Published: December 26, 2018 • https://doi.org/10.1371/journal.pmed.1002715

Abstract

Background

Clinical guidelines recommend psychosocial interventions for cocaine and/or amphetamine addiction as first-line treatment, but it is still unclear which intervention, if any, should be offered first. We aimed to estimate the comparative effectiveness of all available psychosocial interventions (alone or in combination) for the short- and long-term treatment of people with cocaine and/or amphetamine addiction.

Methods and findings

We searched published and unpublished randomised controlled trials (RCTs) comparing any structured psychosocial intervention against an active control or treatment as usual (TAU) for the treatment of cocaine and/or amphetamine addiction in adults. Primary outcome measures were efficacy (proportion of patients in abstinence, assessed by urinalysis) and acceptability (proportion of patients who dropped out due to any cause) at the end of treatment, but we also measured the acute (12 weeks) and long-term (longest duration of study follow-up) effects of the interventions and the longest duration of abstinence. Odds ratios (ORs) and standardised mean differences were estimated using pairwise and network meta-analysis with random effects. The risk of bias of the included studies was assessed with the Cochrane tool, and the strength of evidence with the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. We followed the PRISMA for Network Meta-Analyses (PRISMA-NMA) guidelines, and the protocol was registered in PROSPERO (CRD 42017042900). We included 50 RCTs evaluating 12 psychosocial interventions or TAU in 6,942 participants. The strength of evidence ranged from high to very low. Compared to TAU, contingency management (CM) plus community reinforcement approach was the only intervention that increased the number of abstinent patients at the end of treatment (OR 2.84, 95% CI 1.24–6.51, $P = 0.013$), and also at 12 weeks (OR 7.60, 95% CI 2.03–28.37, $P = 0.002$) and at longest follow-up (OR 3.08, 95% CI 1.33–7.17, $P = 0.008$). At the end of treatment, CM plus community reinforcement approach had the highest number of statistically significant

- Behavioral interventions = first line treatment for MUD
- Most behavioral interventions (CBT, MI, Matrix model, exercise, CM) demonstrated some efficacy in reducing methamphetamine cravings and use
- Contingency management most consistently showed reduced use, increased retention in treatment, better quality of life

Asharani et al Drug and Alcohol Dependence 2020
De Crescenzo et al PLOS Medicine 2018

Photo courtesy of John Mahan MD

Contingency Management: Theory

- Addiction is sustained through reinforced learning
- We cannot simply unlearn habits – we must learn new and competing habits
- CM entrains new behaviors that support the process of recovery
- Breaks recovery process down into a series of concrete, attainable goals
- > 100 RCTs affirm the effectiveness of CM in treating addiction

Roll JM et al. Am Jnl Psych 2006
Roll JM et al. Addict Behav 2013
Rawson, RA et al. Addiction 2016

Contingency Management: Practice

1. Identify a target behavior that can be objectively measured, attainable, and reinforced in real time.

2. Reward that behavior immediately when it occurs, using rewards that are valuable to participants (but not necessarily expensive).

3. Use an escalating schedule of reinforcement.

Photo courtesy of John Mahan MD

Example

Patient on long term IV antibiotics who is often not in her room when it is time for her antibiotics. She likes chocolate and Starbuck's Frappuccinos

Target behavior: be in the room 8:00 am, noon, and 5 pm

Reward: Hershey's kiss each time she is in the room when the nurse arrives with antibiotics

Escalating schedule: $5 Starbuck's card after she has accumulated 10 Hershey's kisses

Center for Substance Abuse Treatment. *Substance Abuse: Clinical Issues in Intensive Outpatient Treatment.* Treatment Improvement Protocol (TIP) Series 47.

Harm Reduction

Harm reduction is a set of practical strategies and ideas aimed at reducing negative consequences associated with drug use. Harm Reduction is also a movement for social justice built on a belief in, and respect for, the rights of people who use drugs.

Harm reduction coalition https://harmreduction.org/about-us/principles-of-harm-reduction/

Harm Reduction is also

Part of the continuum of care

Relationship building

Treatment

Harm Reduction is not

What we do when nothing else works

Harm Reduction Practices: Methamphetamines

Safe injecting:

- Clean needles/rigs (including don't share filters, cookers)
- Don't use alone
- Use needles bevel up
- Use a filter whenever possible
- Test for fentanyl
- Clean water

Collins S et al. Intl Jnl of Drug Policy 2019
Thakarar K, Weinstein ZM, Walley AY. *Postgrad Med J*. 2016;92(1088):356–363.

Harm Reduction Practices: Methamphetamines

Hydration

Toothbrushes

Condoms

Naloxone

Patient Centered: Ask the patient/client: what harms most concern you?

Collins S et al. Intl Jnl of Drug Policy 2019
Thakarar K, Weinstein ZM, Walley AY. *Postgrad Med J*. 2016;92(1088):356–363.

Meds for MA/A Use Disorder

- No FDA-approved meds for MA/A use disorder (MUD)
- Lots of research looking into possible treatments
- Will review published findings from 2 recent trials
- Systematic reviews of medications for MUD

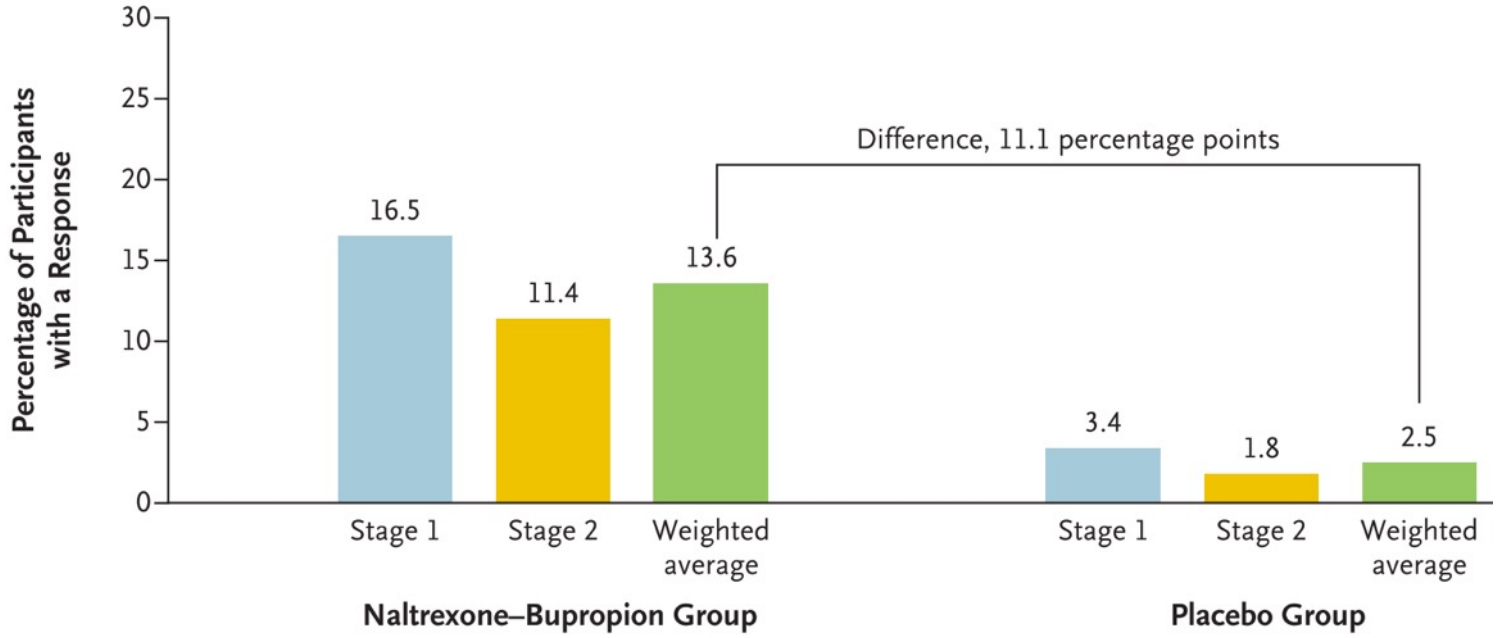
Mirtazapine

- FDA-approved antidepressant
- Main side effects weight gain and somnolence
- Mixed monoamine agonist-antagonist
- Cisgender men & transgender women sex w/ men
- Double blind RCT of 120 participants
- ↓ in methamphetamine + UDT despite low adherence

Coffin P et al, JAMA Psychiatry 2019

Naltrexone IM +Bupropion

- Large multi-center RCT, two-stage, sequential parallel comparison design.
- Number needed to treat – 9, low treatment improvement



Trivedi M, et al NEJM 2021

Sufficient Evidence of No Benefit

- Dopamine agonists (levodopa, cabergoline, pramixpexole)
- Antipsychotics – aripiprazole
- Antidepressants – SSRIs
- Anticonvulsants/muscle relaxants
- Varenicline

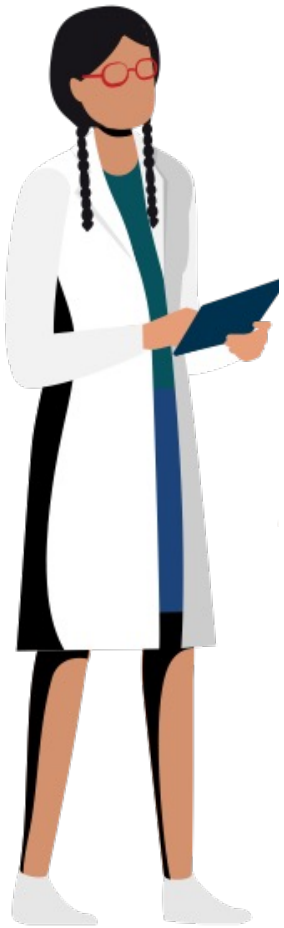
Briones M et al. Drug Alcohol Depend 2018
Ronsley C et al PLoS ONE 2020
Chan B et al Addiction 2019

Insufficient Evidence of Benefit

- Prescription psychostimulant agonist therapy – methylphenidate, modafinil, lisdexamphetamine, dextroamphetamine, mixed amphetamine salts
- Antidepressants – non-SSRI (mirtazapine, bupropion)
- N-acetylcysteine (NAC) – acts as a physiological reservoir of neuronal glutamate

Coffin P et al JAMA Psychiatry 2020
Ronsley C et al PLoS ONE 2020
Tardelli VS et al Psychopharmacology 2020
Chang C-T et al Clin Psychopharmacol Neurosci 2021

Summary



- Methamphetamine use and use disorders are escalating
- There are effective behavioral interventions
- Harm reduction is treatment
- Medications are being investigated

- Questions?
- Thoughts?