





AN INTRODUCTION TO METHAMPHETAMINE USE AND TREATMENT FOR ADDICTION

PRIMARY CARE PRACTICE TEAM TRAINING



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PRACTICE INNOVATION
PROGRAM



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AN INTRODUCTION TO METHAMPHETAMINES

- **Pharmacology:** What is methamphetamine? What does it do?
- **Neurobiology:** Tolerance, Dependence
- **Epidemiology**
- **What can primary care do?**
- **What will you do?**

Jan Knapp, Burlington, CO






METHAMPHETAMINE PHARMACOLOGY



What is methamphetamine?

- Stimulant (psychostimulant)
- Affects the central nervous system
- Man-made drug (synthetic chemical compound)
 - Chemically similar to amphetamine (used to treat attention-deficit hyperactivity disorder, narcolepsy)
 - Much more potent
- Common names: blue, crystal, ice, meth, and speed
- Taken by:
 - Smoking
 - Swallowing (pill)
 - Snorting
 - Injecting powder dissolved in water/alcohol





• Barr AM, Parnenka WJ, MacLellan GW, et al. [The need for special attention to methamphetamine addiction treatment](https://doi.org/10.1093/ips/psaa001). *J Psychiatry Neurosci*. 2006;31(5):301-313.

• Substance Abuse and Mental Health Services Administration. [Tips for Treating Methamphetamine: The Truth About Methamphetamine](https://www.samhsa.gov/2k2/methamphetamine). <https://www.samhsa.gov/2k2/methamphetamine>. Accessed 15 December 2020.

• Substance Abuse and Mental Health Services Administration. [Know the Risks of Meth](https://www.samhsa.gov/2k2/methamphetamine). <https://www.samhsa.gov/2k2/methamphetamine>. Accessed 15 December 2020.

• <https://www.samhsa.gov/2k2/methamphetamine>. Accessed 15 December 2020.

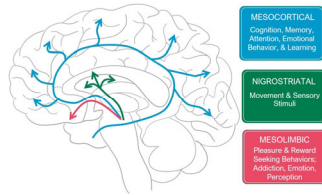


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What does methamphetamine do?

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- Increases the amount of the natural chemical **dopamine** in the brain.
- DOPAMINE: The Chemical Messenger**
 - A type of neurotransmitter: used by the nervous system to send messages between nerve cells
 - Naturally occurring (your body makes it)
 - Plays a huge role in our bodies:
 - Digestive and Immune Systems (dampens inflammation)
 - Body movement
 - Motivation
 - Thought/thinking, learning, memory, attention
 - Emotional behavior
 - Planning
 - Fight or flight stress response
 - Feelings of pleasure
 -Addiction



Rapid release of high levels of dopamine in the brain strongly reinforces drug-taking behavior

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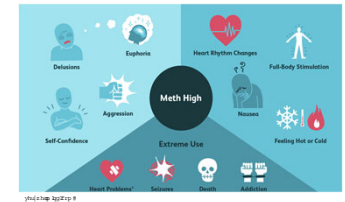
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Effects of methamphetamine

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Short-Term Effects (even small amounts can cause):

- Increased wakefulness and physical activity
- Decreased appetite
- Faster breathing
- Rapid and/or irregular heartbeat
- Increased blood pressure and body temperature



Long-Term Effects:

- Extreme weight loss
- Severe dental problems
- Intense itching (and sores)
- Anxiety
- Changes in brain structure and function
- Heart damage
- Confusion
- Memory loss
- Sleeping problems
- Violent behavior
- Paranoia
- Hallucinations

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How is methamphetamine made?

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- Cooked in home labs (few people produce small amounts) as well as in "super labs" (most common in Mexico and California)
- Highly pure, potent, and low in price
- Made with relatively inexpensive over-the-counter ingredients, including pseudoephedrine:

Pseudoephedrine:

- a common ingredient in cold medications
- law requires pharmacies to keep a purchase record of products containing pseudoephedrine



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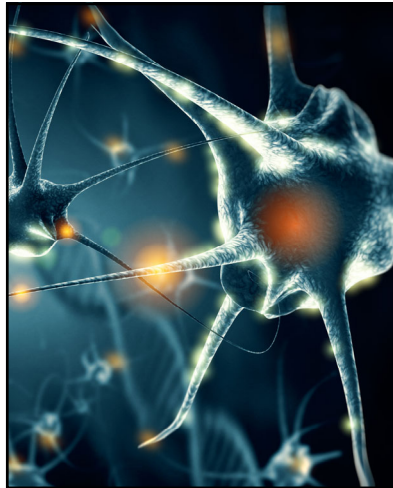
Meth vs Cocaine

IT^{ATT}TRs

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P d q p d g h # f d q e h f f r m b g	S a l q w g h u l y h g # x a f k d v h g - z k r d #
F d g # e h - f r m b g #	S x u f k d v h g # z k r d #
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F k h d s	O h w F k h d s

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NEUROBIOLOGY

Tolerance & physical dependence

Look familiar?

Erw#r#ndqf#l#g#k|v|fddghshghqf#uh#
sk|v|o#j|fddgdsd#v#r#kurgf#(srxu



TOLERANCE

- Increased dosage needed to produce specific effect
- Develops readily for central nervous system



PHYSICAL DEPENDENCE

- Signs and symptoms of withdrawal by abruptly stopping the stimulant

Withdrawal Symptoms

Intense craving
Depression
Fatigue
Unpleasant dreams

Hypersomnia, then insomnia
Increased appetite
Agitation/ Anxiety/ Paranoia
Limited ability to experience pleasure

"upon"
epi
"study"
demi
"people"
ology

EPIDEMIOLOGY

Who is using and why?

Treatment: what primary care can do



- Treatment Gap: Less than 1 in 3 of those with methamphetamine use disorder received substance use treatment in the past year.
- Unlike buprenorphine for opioid use disorder, no medication has been approved by the FDA for the treatment of methamphetamine addiction.
- **Most effective treatments for methamphetamine addiction are cognitive behavioral therapies (CBT).**

"Opioid use disorder is easier. We know what can do about it. For stimulants, like meth, it's harder. There's no robust support for a medication. There's no equivalent to buprenorphine."

- Leslie Brooks, MD,
primary care physician

O'Donnell J, Gladden RM, Mattson CL, Hunter CT, Davis NL. Vital Signs: Characteristics of Drug Overdose Deaths Involving Opioids and Stimulants — 24 States and the District of Columbia, January–June 2019. *MMWR Morb Mortal Wkly Rep* 2020;69:1189–1197.
DOI: <http://dx.doi.org/10.15585/mmwr.mm6935a1external icon>

NIDA. 2021, April 13. What treatments are effective for people who misuse methamphetamine? Retrieved from <https://www.drugabuse.gov/publications/research-reports/methamphetamine/what-treatments-are-effective-people-who-misuse-methamphetamine>



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Treatment: what primary care can do



▪ Primary care practices can:

- Assess and identify people with potential stimulant use disorder
- Utilize cognitive therapy techniques and interventions
- Coordinate with behavioral health care team or refer to behavioral health team
- Medication treatments?
- Serve as the patient's medical home!
 - *Treatment for alcohol or drug use disorders is as effective as treatment for other chronic medical conditions. You can help coordinate care.*
 - *You know the patient's other health conditions and behaviors. You will likely need to help monitor, coordinate care, and treat the long-term effects of meth use.*

O'Donnell J, Gladden RM, Mattson CL, Hunter CT, Davis NL. Vital Signs: Characteristics of Drug Overdose Deaths Involving Opioids and Stimulants — 24 States and the District of Columbia, January–June 2019. *MMWR Morb Mortal Wkly Rep* 2020;69:1189–1197.
DOI: <http://dx.doi.org/10.15585/mmwr.mm6935a1external icon>



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Assess and Identify



Practices can actively screen for drug use:

- Who does screening for other conditions in your practice?
- Who can do these screenings? Anyone? Just the prescriber?
- Has your practice received implementation support for SBIRT?
(*screen, brief intervention, referral to treatment*)



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Assess and Identify: What to look for?



What might make you wonder if someone using a stimulant, such as meth?

- ☐ Loss of interest in life (hobbies, relationships, career)
 - ☐ Hyperactivity
 - ☐ Twitching, facial tics, jerky movements
 - ☐ Paranoia
 - ☐ Dilated pupils
 - ☐ Noticeable and sudden weight loss
 - ☐ Rapid eye movement
 - ☐ Burns, particularly on the lips or fingers
 - ☐ Erratic sleeping patterns
 - ☐ Rotting teeth
 - ☐ Outbursts or mood swings
- "Tweaking":**
- Often lasts 3 to 15 days
 - Anxiety, insomnia, irritability, confusion
- "Crashing":**
- Often lasts 1 to 3 days
 - Exhaustion, intense drug cravings, depression

<https://www.addictioncenter.com/drugs/meth/symptoms-signs/>



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Establish a Diagnosis

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1. Stimulant taken in larger amounts or over a longer period than intended
2. Persistent desire for or unsuccessful attempts to cut down
3. Great deal of effort and time devoted to obtain, use, or recover from effects of the stimulant
4. Craving
5. Recurrent use leading to failure to fulfill major obligations (work, school, home)
6. Continued use despite persistent or recurrent social problems caused or exacerbated by use
7. Important social, occupational, or recreational activities given up due to use
8. Recurrent use in physically hazardous situations
9. Continued use despite persistent or recurrent physical or psychological problems caused or exacerbated by use
10. Tolerance
11. Withdrawal

Not applicable if used as
prescribed in pain program

Presence of...

- 2 – 3 = mild
- 4 – 5 = moderate
- 6 or more = severe stimulant use disorder

DSM-5: Diagnostic and Statistical Manual of Mental Disorders: fifth edition. Released May 2013.



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Counseling and Behavioral Interventions

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- Most effective treatments for methamphetamine addiction come from psychotherapy and behavioral interventions, such as:
 - Motivational interviewing
 - Contingency management
 - Relapse prevention [identify and prevention high-risk situations (e.g., bars, friends who use) that encourage substance use; change expectation of perceived positive effect of use]
 - Couples and family therapies

NIDA. 2021, April 13. What treatments are effective for people who misuse methamphetamine?. Retrieved from <https://www.drugabuse.gov/publications/research-reports/methamphetamine/what-treatments-are-effective-people-who-misuse-methamphetamine>

McHugh RK, Heaton BA, Otto MW. Cognitive behavioral therapy for substance use disorders. *Psychiatr Clin North Am*. 2010;33(3):511-525. doi:10.1016/j.psc.2010.04.012



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Motivational Interviewing

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Why use MI?

- It works! It's effective in medical settings and associated with improved health outcomes.

How is MI different from everything else?

- Recognizes the expertise of the patient on his/her own motivations
- Guides a patient to examine and resolve ambivalence about problem



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Motivational Interviewing

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Four Steps of MI

1. Building rapport with the patient
 - *Would you mind taking a few minutes to talk with me about your screening results?*
2. Focusing on the topic
3. Evoking or eliciting thoughts/emotions about the topic
 - *On a scale of 0 -10, how important is it to you to decrease your drug use?*
 - *What makes you a X and not a lower number?*
4. Planning for change
 - *What do you like/what are not so good things about your current level of drug use?*
 - *What are some reasons you can think of to make a change?*
 - *Let's say you did decide to quit, how would you go about doing it?*



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Contingency Management



Contingency Management (CM)

- Behavioral therapy in which individuals are rewarded (or "reinforced") for evidence of positive behavior change. A way to incentivize a person to achieve a goal or benchmark
- Examples:
 - Reward for drug-free urine test (payment, prize, drawing, voucher)
 - Reward for # of days in treatment program
 - Variation in reinforcement amount, value, type based on # times patient achieves benchmark

Contingency Management



Evidence for CM

- Decades of studies support CM ability to:
 - Promote abstinence from methamphetamine, opiates, alcohol, tobacco (e.g., 61% successful treatment episodes vs 39% for other modalities)
 - Reduce drug use for the long-term (12 – 18 months after treatment completion)
- Patients report CM is acceptable form of intervention/treatment!
- Recommended readings:

Hayley D. Brown, Anthony DeFulio. Contingency management for the treatment of methamphetamine use disorder: A systematic review. *Drug and Alcohol Dependence*. 2020;216. <https://doi.org/10.1016/j.drugalcdep.2020.108307>

McPherson SM, Burduli E, Smith CL, Herron J, Oluwoye O, Hirschak K, Orr MF, McDonnell MG, Roll JM. A review of contingency management for the treatment of substance-use disorders: adaptation for underserved populations, use of experimental technologies, and personalized optimization strategies. *Subst Abuse Rehabil*. 2018;9:43-57 <https://doi.org/10.2147/SAR.S138439>

Contingency Management



Considerations for implementing Contingency Management

- Can be embedded in behavioral treatment programs and in group visits (including in primary care settings)
- Rewards:
 - Make relevant to patient (e.g., if patient is a mother, make reward relevant to ability to care for child)
 - Can be financially burdensome to the practice. Studies show that the effect of CM is influenced by the size of the reward.
 - Centers for Medicare/Medicaid Services or certain health plans impose limits on monetary incentives (\$75 - \$100), although there is a push to eliminate these policies.
 - You or your colleagues might need to be creative.

Medications



- Recent studies have explored treating meth addiction with a variety of medications, such as:
 - Stimulant agonist treatment (dexamphetamine and methylphenidate)
 - Naltrexone
 - Injectable Naltrexone + oral bupropion (Jan 2021)
 - Topiramate (a prescription medication to treat epilepsy)
 - Mirtazapine (a prescription medicine to treat depression and sometimes and anxiety disorders)

Suggested article: Siefried KJ, Acheson LS, Lintzeris N, Ezard N. Pharmacological Treatment of Methamphetamine/Amphetamine Dependence: A Systematic Review. *CNS Drugs*. 2020;34(4):337-365. doi:10.1007/s40263-020-00711-x

- However, there are currently no medications that counteract the specific effects of methamphetamine or that prolong abstinence from and reduce the misuse of methamphetamine by an individual addicted to the drug.

- National Institute of Drug Abuse (April 2021)

Treatment: What's on the Horizon?

- Research continues on a range of treatments for meth and other stimulant use disorders, including:
 - Medications (both to treat addiction and to treat physical and cognitive consequences of long-term use)
 - Vaccines and antibodies
 - Neuro-feedback
 - Noninvasive stimulation of the brain using magnetic fields.
- **Recommended Website:** National Institute on Drug Abuse (<https://www.drugabuse.gov/>) for regular updates

Treatment: What can Primary Care Do?

- Assess and identify people using opioids. *Remember comorbidity rates for opioid and meth use?*
- Assess and identify people using methamphetamine (implement SBIRT)
- Utilize behavioral health interventions within the practice, including individual and group visits
- Refer patients to behavioral health care providers that offer evidence-based approaches
 - Substance use treatment services
 - Employee Assistance Programs (EAPs)
 - Faith community/clergy support
 - Mutual support self-help groups (AA, Life Ring, Smart Recovery, etc.)
- Be the medical home! *Patients are more receptive to treatment when primary care is involved. PCP involvement increases likelihood of successful long-term recovery.*

Utilize Resources

- University of Colorado [Practice Innovation Program](http://www.practiceinnovationco.org) offers:
 - Interactive online Forums (free, 2x a month, with Consultant Panel)
 - Consultant Panel (clinicians, staff, and others with expertise)
 - www.practiceinnovationco.org
- University of California – San Francisco “Warmline”
 - Free and confidential clinician-to-clinician telephone consultation
 - For primary care clinicians
 - 1-855-300-3595

Utilize Resources

- No cost SBIRT Training:
 - Peer Assistance Services, Inc (Parker, CO; <https://www.peerassistanceservices.org/>)
 - In person and online
- Motivational Interviewing
 - University of Colorado College of Nursing MI Course (<https://cucon.regfox.com/CUMotivate>)
 - <https://www.youtube.com/watch?edufilter=NULL&feature=youtu.be&v=w1n1GhtFq0M>
(Peer Assistance Services)

Windup hq#Drfdwru

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Questions

- What conversations will you have with your care team? Who will you talk to?
- What's a case for primary care engaging in any aspect of care around meth use?
- What are you risking by not knowing if someone is using meth?
- How does use impact your care for the person otherwise?
- What additional information do you want?

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 RESEARCH NETWORK

SNOCAP
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CaReNet

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 Team Training



ASAM
 American Society of
 Addiction Medicine

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