Methamphetamine and Other Nonmedicinal Stimulants in MD

Aaron Greenblatt, MD
MACS Consultant
Outline

• Epidemiology of nonmedicinal amphetamine-type stimulant (ATS) use in the US and MD
• Manifestations and common comorbidities of stimulant use disorder
• Evidence base for stimulant use disorder treatments, including psychosocial interventions and medications
• Hear from an individual in recovery from methamphetamine use disorder
Global Importance

Number of past-year users in millions

2018

- **cannabis**: 192
- **opioids**: 58
  - **opiates**: 30
  - **amphetamines and prescription stimulants**: 27
  - **"ecstasy"**: 21
  - **cocaine**: 19

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Illustrative Case: Donny

48 year old man, seen via telemedicine in Caroline County. History of methamphetamine and opioid use disorders, hip OA, and bipolar disorder, now stabilized on buprenorphine and brexipiprazole.

Utoxes previously negative for nonprescribed substances, but now positive for methamphetamine over the past few months. After a few months of denying use, endorses relapse (to meth, not opioids) when triggered by seeing others using crank and dope in a trailer he wandered into while bored at a bonfire.
Molecules

\begin{align*}
\text{(+)-amphetamine (AMP)} & \quad \text{(+)-methamphetamine (METH)}
\end{align*}
More Molecules

Cathinone

Methcathinone

Bupropion
The mechanism of action
US Overdoses

Figure 2. National Drug-Involved Overdose Deaths*, Number Among All Ages, 1999-2019

- Synthetic Opioids other than Methadone (primarily fentanyl)
- Psychostimulants with Abuse Potential (primarily methamphetamine)
- Cocaine
- Prescription Opioids (natural & semi-synthetic opioids & methadone)
- Heroin
- Benzodiazepines
- Antidepressants
Without and with opioids

Figure 6. National Drug Overdose Deaths Involving Psychostimulants with Abuse Potential (Primarily Methamphetamine)*, by Opioid Involvement Number Among All Ages, 1999-2019
FIGURE. Methamphetamine injection, use disorder, frequency of use, receipt of substance use treatment,* other substance use,† and mental illness among adults aged ≥18 years reporting past-year methamphetamine use — United States, 2015–2018. The chart shows the percentage among adults using methamphetamine in the past year for various categories. The main focus is on the percentage, which is 22.3%.
Deaths disproportionate x race

U.S. Overdose Deaths Involving Methamphetamine in People Ages 25 – 54*

*Recent national data show that most people who use methamphetamine are between 25 and 54 years old, so investigators limited analysis to this age group.
Methamphetamine Overdose Rate per 100,000

2011

Legend
0.05 20.16

[Map showing overdose rates across the United States, with Nevada highlighted]
Vulnerable Populations

• Rural Whites
  – Impact spreading east, mixing with opioids, getting stronger and more available with P2P-based manufacture.

• Native American and Hawaiian communities
  – 39% of Native ODs in 2018 related to methamphetamine

• MSM
  – Use at up to 25-45x the rate of the general population
  – Chemsex: ↑’d risk HIV transmission
Maryland Specifics

• **2002**: “Methamphetamine abuse is limited in Maryland...in 1999 there were no methamphetamine-related admissions to publicly funded facilities.”

• **2020**: 52 meth-related fatalities in the first 9 months of the year. (>10k nationwide in 2019)

• Deaths mostly related to co-administration of opioids in Maryland

• “Ice” and “Glass”; “Crank” for old-timers
Baltimore

• Cocaine ("girl") dominant
• Limited other stimulant use
• Exceptions:
  – e-pills
    • Tablet form—maybe MDMA, amphetamines, other phenethylamine compounds
  – molly
    • Methamphetamine &/or synthetic cathinones
    • Sold in “bullets” and “trash cans”
Illustrative Case: Darryl

38 year old man, seen in an integrated OUD/primary care/infectious disease practice in Baltimore. History of IDU with cocaine and opioids, on 120mg/day methadone. Utox positive for fentanyl and methamphetamine. Endorses IV dope and molly. Complaining of a recurrent parasitosis, nonresponsive to dual ivermectin/permethrin therapy. Derm exam significant for weeping skin ulcerations on extremities and chest; absent on back.

Darryl observes that “everyone who uses these research chemicals gets these bugs—I’ve seen them stick their heads out at night.”
Medical and psychiatric sequelae

- Psychosis, mood disorders
- Infectious diseases related to IDU and chemsex
- Hypertension-related diseases
- Heart disease (including methamphetamine-associated cardiomyopathy--MACM)
- Malnutrition
Toxicology Testing

- 2-4 day detection window
- Methamphetamine → amphetamine; both can be present in urine after methamphetamine use.
- Selegiline, femprofazone, and benzphetamine are all metabolized to M & A.
- 3,4-Methylenedioxymethamphetamine (Ecstasy, MDMA) is metabolized to 3,4-methylenedioxyamphetamine (MDA). Only sometimes cross-reacts with AMP immunoassay.
- Lots of other ELISA cross-reactivity with non-ATS
- Minimal/absent cross-reactivity with cathinones
- Confirmatory/GCMS when in doubt
  - d- and l-methamphetamine (l- consistent with Vick’s Vapor Inhaler use)
Diagnosis of Stimulant Use Disorder

1. Often using larger amounts/for longer
2. Persistent desire or unsuccessful efforts to cut down
3. Great deal of time is spent getting, using, or recovering
4. Craving
5. Recurrent failure to fulfill major role obligations
6. Continued use despite social or interpersonal problems
7. Giving up important activities
8. Recurrent use when physically hazardous
9. Use despite physical or psychological problems
10. Tolerance
11. Withdrawal
Treatments of Stimulant Use Disorder

• Psychosocial interventions the mainstay of treatment
  – Matrix IOP model is the archetype
    • Outpatient intervention based on cognitive principles; incorporates individual, group, and family therapies, drug testing, and a 12-step program
  – Contingency management.
  – Comprehensive case management

• Some evidence for anticonvulsants, XR stimulants, aldehyde dehydrogenase inhibitors
Matrix IOP model

• Early Recovery Skills Group:
  – You can change your behavior in ways that will make it easier to stay abstinent, and the ERS group sessions will provide you with strategies and practice opportunities to do that.
  – Professional treatment can be one source of information and support. However, to benefit fully from treatment, you also need 12-Step or mutual-help groups.
Matrix IOP model

• Relapse Prevention Group:
  – Relapse is not a random event.
  – The process of relapse follows predictable patterns.
  – Signs of impending relapse can be identified by staff members and clients.
  – Example session topics: Guilt and shame; Staying busy; Motivation for recovery; Be smart, not strong; Emotional triggers

• Family Support/Education
Matrix IOP model

• Social Support Group/Continuing Care
• Weekly toxicology testing, at minimum
  – May respond with change in treatment intensity
• Individual counseling (with or without family)
  – At least 3 manualized sessions
Medications

• Nowhere near the evidence base as for opioids
• Not clear (though plausible) that interventions tested for cocaine would work for ATS
• Topiramate (titrated to 200mg/day) with extended release mixed amphetamine salts (at 60mg/day) showed promise for cocaine. Not tested for methamphetamine.
• Bupropion & mirtazapine results were underwhelming; mirtaz decreased use and risky chemsex in one small study
Discussion
Summary

• Psychosocial interventions (including manualized counseling, contingency management, and peer & family support) help

• Medications are tempting to use, but evidence base is shaky

• If not already present in your community, methamphetamine may be here soon...
Provides support to prescribers and their practices in addressing the needs of their patients with substance use disorders and chronic pain management.

All Services are FREE

• Phone consultation for clinical questions
• Education and training opportunities related to substance use disorders and chronic pain management
• Assistance with addiction and behavioral health resources and referrals
• Technical assistance to practices implementing or expanding office-based addiction treatment services
• MACS TeleECHO™ Clinics: collaborative medical education through didactic presentations and case-based learning

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