Stimulant Use Disorders

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Learning Objectives

- Recognize the prevalence of stimulant use disorders locally and nationally, including the presence of stimulants in our current overdose epidemic.

- Describe the neurological mechanism of action of stimulants, and the resulting symptoms of intoxication and withdrawal syndromes.

- Identify health promotion strategies for health risks that may present with stimulant use disorders.

- Review evidence-supported treatment options for stimulant use disorders.
Data & Trends
Use, Disorder & Fatality
Rates of Cocaine Use

https://pdas.samhsa.gov/saes/state
Rates of Cocaine Use

Cocaine Use in the Past Year in Florida, by Age Group

https://pdas.samhsa.gov/saes/state
Perception of Risk of Using Cocaine

Prevalence among Individuals Aged 12 or Older in Florida, by Outcome

https://pdas.samhsa.gov/saes/state
Perception of Risk of Using Cocaine

Perceptions of Great Risk from Using Cocaine Once a Month in Florida, by Age Group

https://pdas.samhsa.gov/saes/state
Rates of Methamphetamine Use

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How Stimulants Work

Neurobiology of Use, Intoxication & Withdrawal
Brain Function

- Neurons communicate using chemical messengers
- Different chemicals carry different messages
- Chemical imbalance creates imbalance in the messages – thoughts, emotions, perceptions, and feelings
Brain Reward Dopamine Pathway

Frontal Cortex → Nucleus Accumbens → Ventral Tegmental Area

Neurotransmitter activity in these circuits are important for natural rewards such as food, music, sex, etc.

NIH/NIAAA, 2014
Stimulants Increase Dopamine

While Eating Food

While Using Cocaine

NIH/NIAAA, 2014
Stimulants & Neurotransmission

**Amphetamine / Methamphetamine** increases release of dopamine primarily by entering presynaptic neuron and forcing dopamine out.

**Cocaine** increases release of dopamine AND prevents reuptake.

Mack et al 2016
Stimulants & Neurotransmission

Cocaine + Alcohol = cocaethylene

- Toxic substance produced by liver
- Enters bloodstream, binds to same receptors as cocaine
- Produces euphoria + effects of alcohol on brain

Mack et al 2016
## Methamphetamine vs. Cocaine

<table>
<thead>
<tr>
<th>Methamphetamine</th>
<th>Cocaine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man Made</td>
<td>Plant-derived</td>
</tr>
<tr>
<td>Smoking produces a high that lasts 8-24 hours</td>
<td>Smoking produces a high that lasts 5-10 minutes</td>
</tr>
<tr>
<td>50% of the drug is removed from the body in 12 hours</td>
<td>50% of the drug is removed from the body in 1 hour</td>
</tr>
<tr>
<td>Limited medical use</td>
<td>Used as a local anesthetic</td>
</tr>
</tbody>
</table>

NIDA 2013
Stimulant Intoxication

Diagnostic Criteria

A. Recent use of an amphetamine-type substance, cocaine, or other stimulant.
B. Clinically significant problematic behavioral or psychological changes (e.g., euphoria or affective blunting; changes in sociability; hypervigilance; interpersonal sensitivity; anxiety, tension, or anger; stereotyped behaviors; impaired judgment) that developed during, or shortly after, use of a stimulant.
C. Two (or more) of the following signs or symptoms, developing during, or shortly after, stimulant use:
   1. Tachycardia or bradycardia.
   2. Pupillary dilation.
   3. Elevated or lowered blood pressure.
   4. Perspiration or chills.
   5. Nausea or vomiting.
   7. Psychomotor agitation or retardation.
   8. Muscular weakness, respiratory depression, chest pain, or cardiac arrhythmias.
   9. Confusion, seizures, dyskinesias, dystonias, or coma.
D. The signs or symptoms are not attributable to another medical condition and are not better explained by another mental disorder, including intoxication with another substance.
Stimulant Withdrawal

Diagnostic Criteria

A. Cessation of (or reduction in) prolonged amphetamine-type substance, cocaine, or other stimulant use.

B. Dysphoric mood and two (or more) of the following physiological changes, developing within a few hours to several days after Criterion A:
   1. Fatigue.
   2. Vivid, unpleasant dreams.
   3. Insomnia or hypersomnia.
   4. Increased appetite.
   5. Psychomotor retardation or agitation.

C. The signs or symptoms in Criterion B cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The signs or symptoms are not attributable to another medical condition and are not better explained by another mental disorder, including intoxication or withdrawal from another substance.
Pause -
please return in
5 minutes
Health Promotion

Strategies to increase health and reduce risks and harms.
HIV & Hepatitis Prevention

People who use stimulants have a higher risk for other health issues, especially HIV & Hepatitis B or C.

Health promotion counseling is a vital tool in helping people to improve their health and reduce their risks.

NIDA 2016; NIDA 2013
HIV & Hepatitis Treatment

Stimulant use can exacerbate HIV and Hepatitis B/C for those who are already living with these conditions.

Health promotion counseling also supports people to engage in routine medical care.

NIDA 2016; NIDA 2013
ROCK Cocaine
Harm and Reduction

Anxiety, paranoia, psychosis, insomnia
Reduce intake
Try to ensure adequate sleep
Awareness of warning signs
Reduce or stop when becoming too anxious

Injecting complications:
Numbs injecting sites;
Inject cocaine powder if possible
Don't share; will need acid;
Don't heat when in crack form – will congeal;
Keep needle dry before injecting
Large number of needles for repeat injections

Liver disease
Don't mix with alcohol

Dependency
High risk of dependency
Use infrequently if at all

Lips and teeth: use heat-proof mouthpiece
Use lip balm
Don't share pipes

Lung damage, “crack lung”
Use glass pipes, steel gauzes
Avoid ash, plastic

Heart Failure/high BP:
Long binges are risky – stop when it isn’t rewarding;
Don’t exert after using
Don’t mix with other stimulants
Avoid if history of heart problems
Don’t mix with other drugs which raise BP

Appetite suppression/weight loss
Breaks from use,
Good diet

Cocaine Powder/Amphetamine Powder
Harm and Reduction

- Anxiety, paranoia, psychosis, insomnia
  - Reduce intake
  - Try to ensure adequate sleep
  - Awareness of warning signs
  - Reduce or stop when becoming too anxious

- Injecting complications:
  Numbs injecting sites; acidic
  - Don't share; don't acidify
  - Keep needle dry before injecting
  - Large number of needles for repeat injections

- Liver disease
  - Don't mix with alcohol

- Dependency:
  - Take breaks from use
  - Reduce frequency from use
  - Watch for self-medicating out of come-downs

- Damage to nose and gums
  - Rinse area after use
  - Move to another area if bleeding
  - Don't share tubes

- Heart Failure/high blood pressure
  - Don't exert after using
  - Don't mix with stimulants
  - Avoid if history of heart problems
  - Don't mix with other drugs which raise BP

- Appetite suppression/weight loss
  - Breaks from use,
  - Good diet

- Increased risk of unsafe sex
  - Use of condoms
  - Use of lubricant
  - Avoid using with viagra
Amphetamine
Harm and Reduction

Anxiety, paranoia, psychosis, insomnia
- Reduce intake
- Try to ensure adequate sleep
- Awareness of warning signs
- Reduce or stop when becoming too anxious

Injecting complications:
- Speed Powder: water soluble – don’t acidify, Do filter
- Base Speed: insoluble: acidify before injecting and allow to cool
- Don’t share equipment

Liver disease
- Don’t mix with alcohol

Damage to nose and gums
- Rinse area after use
- Move to another area if bleeding
- Don’t share tubes

Heart Failure/high blood pressure
- Don’t exert after using
- Don’t mix with stimulants
- Avoid if history of heart problems
- Don’t mix with other drugs which raise BP

Appetite suppression/weight loss
- Breaks from use,
- Good diet

Increased risk of unsafe sex
- Use of condoms

Safer Use: Fentanyl Testing

Testing for the presence of fentanyl helps people to make more informed choices about their use of substances, supporting safer use practices.

Krieger et al. 2018

Image: DanceSafe.org
Overdose Prevention: Opioids in Stimulants

Naloxone is only effective in reversing overdoses due to an opioid (such as fentanyl or heroin).

Remember, there may be opioids present in the cocaine or methamphetamine.

Image Source: Harm Reduction Coalition
http://harmreduction.org/miscellaneous/photobooth/
Overdose Prevention: Using Opioids & Stimulants at the same time

Using opioids and stimulants together increases overdose risk:

- Someone may take more opioids when using stimulants due to the stimulant blunting the sedating effects of the opioid.
- The stimulant will wear off faster, potentially leaving the person at increased risk of opioid overdose.

NIDA 2016
Overdose Prevention: Stimulants

Severe Signs & Health Issues

- Difficulty breathing
- High blood pressure
- High body temperature
- Extreme agitation/anxiety
- Hallucinations
- Chest pains
- Seizures
- Stroke
- Irregular heart rhythm

NIDA 2018
Overdose Prevention: Stimulants

What can we do if someone may be overdosing?

Seek medical attention

If you see signs of opioid overdose, administer naloxone and follow protocol for reversing opioid overdose. There is no single medication to reverse a cocaine overdose (that is not due to opioids within the stimulant), emergency medical care is needed.

NIDA 2018
For more information on prevention overdose due to stimulant use or “Overamping”

Information from the Harm Reduction Coalition:

https://harmreduction.org/issues/overdose-prevention/overview/stimulant-overamping-basics/
Treatment Options

Evidence-Supported Interventions
Specialized Needs in Continuing Recovery

Research has found that the way that stimulants impact our brain chemistry create very strong links within our neural reward pathways, resulting in strong associations that can cue craving experiences.

Treatment can be most effective when we are helping people learn new skills to manage these strong associations, as well as building a life of recovery within the community.

NIDA 2018
Cognitive Behavioral Therapy (CBT)

Thoughts

Behavior

Feeling

Hofman et al 2012
Relapse Prevention Therapy

A kind of CBT that is specialized in helping people recover.

Includes:

● Skill building
● Behavior chaining
● Craving management
● Prevention planning for risky situations

Bowen, Chawla, & Marlatt, 2011
The Matrix Model

- Group & Individual/Family Counseling
- Therapist Support
  - Empathic, with skills in cognitive-behavioral & motivational approaches
- Mutual Aid Recovery Support Groups
- Relapse Prevention and Education
- Family Involvement
- Clear & Consistent Program Structure

NIDA 2018, CSAT 2006
Future Directions: Medication Assisted Treatment

Currently, there are no medications that are FDA-approved in the treatment of stimulant use disorder.

Researchers continue to investigate potential options, including:

- disulfiram (used to treat alcoholism)
- modanifil (used to treat narcolepsy—a disorder characterized by uncontrollable episodes of deep sleep)
- lorcaserin (used to treat obesity)
- buprenorphine (used to treat opioid addiction)

Question & Answer
Thank you!

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www.GZapata-Alma.com
Resources & References

Resources & References

Resources & References

The Matrix Model: Manuals & Resources


https://store.samhsa.gov/product/Matrix-Intensive-Outpatient-Treatment-for-People-With-Stimulant-Use-Disorders-Client-s-Treatment-Companion/SMA14-4155
