

Take it to Heart:

Stimulant Cardiovascular Review Toolkit



Topics

- What are stimulants?
- Stimulant Overdose Symptoms
- Stimulant Statistics
- The Stimulant-Opioid Syndemic
- Cardiovascular Risks
- ASAM/AAAP Clinical Practice Guidelines
- Critical Treatment Gaps
- Marked Racial & Ethnic Disparities
- Call to action

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Stimulants 101

- What are stimulants?
 - Stimulants are a diverse class of drugs that speed up the activity of the central nervous system
 - Stimulants include:
 - legal substances such as caffeine and nicotine
 - medications such as dexamphetamines, Adderall, methylphenidate (Ritalin)
 - illicit substances such as methamphetamine or cocaine.

• Symptoms of Stimulant Intoxication & Overdose

- Cardiovascular: tachycardia, hypertension, arrhythmias, cardiac ischemia, possible aortic dissection
- Pulmonary: hemorrhagic alveolitis (“crack lung”), pneumothorax or pneumomediastinum from forceful inhalation
- Gastrointestinal: ischemic bowel
- Neuropsychiatric: agitation, paranoia, hallucinations, psychosis, altered mental status, tremors, seizures, intracranial hemorrhage or stroke in severe cases
- Hyperthermia that can lead to rhabdomyolysis, organ failure, and coagulopathy

Stimulants now drive most U.S. overdose deaths

- 59% of U.S. overdose deaths (2021-2024) involved stimulants, including cocaine and psychostimulants (primarily methamphetamine)
- Existing evidence suggests that death from acute stimulant toxicity is due to chronic cardiovascular disease that is acutely exacerbated by stimulants. This is different than opioids, which are associated with the amount of drug used (e.g. opioid overdose)

40%

40% of people who died after stimulant exposure had known cardiovascular disease

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The Stimulant-Opioid Syndemic

- 73% of stimulant-related overdose deaths also involved opioids. Combined stimulant-opioid deaths account for nearly 45% of all drug overdose deaths
- As deaths due to opioids decline, failure to address stimulant co-use may blunt or overtake these gains
- Physicians must know the risks of contaminated substances. It is important to prescribe and advise use of Narcan for patients using any illicit substances
- Take action:
 - Provide patients who use stimulants with fentanyl test strips if readily available or refer them to community resources to obtain test strips
 - Prescribe and advise use of Narcan for patients using any illicit substances, including stimulants
 - Advocate for legal access & distribution of harm-reduction tools, including test strips that can detect fentanyl and other adulterants



Marked Racial & Ethnic Disparities

- Psychostimulant-involved overdose deaths increased nearly 3-fold among American Indian and Alaska Native populations
- Cocaine-involved overdose increased more than 2.5-fold among Black or African American persons

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The Cardiovascular Risks of Stimulants

- Using stimulants, such as cocaine and methamphetamine, is a known risk factor for cardiovascular and cerebrovascular disease. Yet, stimulant use is not included as a risk enhancer in the new 2026 AHA/ACC Lipid Guidelines.
- Acute effects of cocaine on the heart include electrocardiographic abnormalities, HTN, arrhythmias, and acute MI
- Chronic effects associated with cocaine use:
 - Cardiomyopathy: dilated cardiomyopathy, systolic dysfunction or LV failure
 - Atherosclerosis
 - Coronary artery disease: vasoconstriction, intracoronary thrombosis, accelerated atherosclerosis
- From 2014 to 2023, stimulant-involved CVD mortality rose sharply (10.1%) when compared to overall CVD mortality (0.2%)
- Take action:
 - When individualizing the risks for patients, consider stimulant use to be a risk enhancer for ASCVD and treat aggressively with lipid-lowering agents
 - Discuss the role of stimulants on heart health with your patients

Heart Health: ASAM/AAAP Clinical Practice Guidelines on Management of Stimulant Use Disorder

- When evaluating patients with long-term or heavy stimulant use, clinicians should have an elevated degree of suspicion for cardiac disorders and a lower threshold for obtaining ECG based on history and physical exam findings
- Recommendations for treatment of hyperadrenergic symptoms of stimulant intoxication:
 - Ongoing heart rate and blood pressure monitoring
 - Treat stimulant intoxication with GABAergic agents (BZDs, phenobarbital, propofol). Benzodiazepines are first line treatment



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Heart Health: ASAM/AAAP Clinical Practice Guidelines on Management of Stimulant Use Disorder (Cont.)

- Recommendations for patients with hypertensive emergency during stimulant intoxication:
 - Treat stimulant intoxication as above with GABAergic agents
 - Use short-acting agents such as sodium nitroprusside, phentolamine, or dihydropyridine calcium channel blockers
 - Avoid long-acting antihypertensives to avoid abrupt hemodynamic collapse
 - Use nitroglycerin if patient exhibits signs or symptoms cardiac ischemia
- Recommendations for acute chest pain during stimulant intoxication"
 - Treat stimulant intoxication as above with GABAergic agents
 - Evaluate for acute coronary syndrome
 - Calcium channel blockers and nitroglycerin are generally preferred for management of cardiac ischemia in patients with stimulant intoxication
 - If beta blockers used, non-selective beta blockers are preferred and should be given only after vasodilator administration
- Recommendations for management of life-threatening arrhythmias
 - Hypertonic sodium bicarbonate (2 ampule bolus) for wide-complex tachycardia (reverse cocaine-induced sodium channel blockade)

What do the guidelines say about cardiac risk reduction in patients prescribed stimulant medications for ADHD and other health conditions?

- American Academy of Pediatrics recommends obtaining thorough cardiac history before starting stimulant medications but does not recommend routine EKG

Critical Treatment Gaps

- There are NO reversal agents for stimulant overdose
- There are NO FDA-approved pharmacologic treatment for stimulant use disorder
- There are no guidelines for cardiovascular risk reduction in patients with stimulant use disorder nor do current guidelines including stimulant use as a risk enhancer.

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Other Ways You Can Help

- Routinely evaluate cardiac health in patients who use stimulants: 40% of people who died from stimulant overdose had known cardiovascular disease
- Advocate for stimulant use disorder to be included as a risk enhancer for cardiovascular disease in traditional risk assessments
- Ask about and test for concurrent substance use, which may initially mask or blunt symptoms of stimulant toxicity until patient becomes critically ill
- Advocate for legal access & distribution of harm-reduction tools, including test strips that can detect fentanyl and other adulterants
- Support research funding to develop pharmacologic treatment of stimulant use disorder
- Champion community education initiatives that educate the public on early recognition of stimulant toxicity

References

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