SUBSTANCE-RELATED AND ADDICTIVE DISORDERS

Stimulant Use Disorder

StUD

DSM-5-TR 304.40/305.70 | ICD-10-CM F15.10, F15.20; F14.10, F14.20 (COCAINE)

Compulsive cocaine or amphetamine-type stimulant use marked by binge-crash cycling, psychosis risk, and no approved pharmacotherapy.

12-MONTH PREVALENCE	TYPICAL ONSET	SEX RATIO	COURSE
~1.5% (US adults, any type)	Late teens to mid-20s	~2:1 male:female	Binge-crash; high relapse

CLINICAL PICTURE

- Binge use over hours to days is followed by a crash of hypersomnia, hyperphagia, dysphoria, and intense craving that closely mimics major depression.
- Acute intoxication brings euphoria, hypervigilance, pressured speech, mydriasis, bruxism, tachycardia, hypertension, and hyperthermia.
- Prolonged methamphetamine use produces paranoia, tactile hallucinations, stereotyped behaviors, dental decay, and excoriated skin lesions.
- Cognitive complaints of poor memory, sustained attention, and decision-making persist for weeks to months after the last use.
- Sexualized use, especially in chemsex contexts, raises HIV and sexually transmitted infection risk and complicates honest disclosure.
- Cardiovascular emergencies include chest pain, arrhythmia, aortic dissection, myocardial infarction, and hemorrhagic stroke in young patients.

DIAGNOSTIC CRITERIA AT A GLANCE

- Diagnosed when at least 2 of 11 criteria occur within 12 months, with the class specified as amphetamine-type, cocaine, or other stimulant.
- Severity is mild 2-3, moderate 4-5, or severe 6 or more, and a prescribed-medication exclusion applies to tolerance and withdrawal.
- Stimulant withdrawal is a separate diagnosis requiring dysphoric mood plus at least 2 physiologic changes within hours to days of stopping.
- Stimulant-induced psychotic disorder applies when psychosis exceeds what intoxication explains and warrants independent clinical attention.
- Remission specifiers require no criteria other than craving for 3 to under 12 months (early) or for 12 months or more (sustained).

NEUROBIOLOGY & PHYSIOLOGY

- Cocaine blocks dopamine, norepinephrine, and serotonin reuptake, while amphetamines additionally reverse **DAT** and empty vesicular stores.
- The resulting nucleus accumbens dopamine surge is far larger and faster than that from natural rewards, driving powerful incentive salience.
- Chronic use downregulates striatal **D2** receptors, blunting response to ordinary reinforcers and producing durable anhedonia and amotivation.
- Methamphetamine is neurotoxic to dopaminergic and serotonergic terminals, with only partial recovery over 12 to 24 months of abstinence.
- Glutamatergic remodeling of prefrontal-to-accumbens projections underlies cue-induced craving and its incubation across early abstinence.
- Sympathomimetic load causes vasoconstriction, accelerated atherosclerosis, cardiomyopathy, and hyperthermia with rhabdomyolysis.

PSYCHOLOGICAL MECHANISMS

- Incentive sensitization makes drug cues progressively more attention-grabbing even as the subjective pleasure of use steadily declines.
- Craving incubates rather than fades, peaking weeks to months into abstinence and catching patients off guard after early success.
- Use is often functional at first, sustaining long work shifts, controlling weight, or countering depressive and ADHD symptoms.
- Conditioned cues include paraphernalia, cash, music, and sexual contexts, all of which require explicit stimulus-control planning.
- Post-binge shame and cognitive impairment undercut follow-through, so early sessions should be brief, concrete, and tightly structured.

DIFFERENTIAL & COMORBIDITY

- Distinguish stimulant-induced psychosis, which usually clears within days to a month of abstinence, from a primary schizophrenia spectrum disorder.
- Screen for untreated ADHD and bipolar disorder, both common in this population and both substantially changing the treatment plan.
- Co-use of opioids and fentanyl-adulterated stimulants now drives many overdose deaths, so provide overdose education to every patient.
- Expect high rates of depression, PTSD, HIV, hepatitis C, and methamphetamine-associated pulmonary hypertension and cardiomyopathy.
- Agitation with hyperthermia is a medical emergency: give benzodiazepines first, cool actively, and avoid relying on physical restraint.

Treatment EVIDENCE-BASED MANAGEMENT

PHARMACOLOGIC

- No medication is FDA-approved for stimulant use disorder, so treatment is behavioral first with pharmacotherapy as an adjunct in selected patients.
- Combined **bupropion 300-450 mg/day** with **naltrexone 380 mg IM** showed modest benefit for methamphetamine use disorder in the ADAPT-2 trial.
- **Topiramate** for cocaine and **mirtazapine 30 mg/night** for methamphetamine have limited but positive randomized trial support.
- Prescription psychostimulant agonist therapy remains investigational and should be avoided outside research or specialist addiction settings.
- Treat comorbidity directly with long-acting stimulants or **bupropion** for ADHD, and brief antipsychotic use for persistent stimulant psychosis.

PSYCHOTHERAPY

- **Contingency management** is the single most effective intervention when incentives are of sufficient magnitude, frequency, and immediacy.
- The **community reinforcement approach** plus vouchers outperforms standard drug counseling across multiple randomized controlled trials.
- **CBT** with relapse prevention over 12 to 16 sessions addresses cue exposure, refusal skills, and structured lapse management.
- The **Matrix Model**, a 16-week structured intensive outpatient program, remains the benchmark for methamphetamine use disorder.
- **Motivational interviewing** engages ambivalent patients, particularly when use serves functional goals such as work performance.

ADJUNCT & SUPPORTIVE

- Expect cognitive impairment early, so use written plans, repetition, appointment reminders, and shorter sessions during the first month.
- Address sleep, nutrition, and dental care, and normalize that anhedonia improves over 4 to 12 weeks rather than medicating it reflexively.
- Provide **naloxone**, fentanyl test strips, and HIV pre-exposure prophylaxis, particularly for patients in sexualized use contexts.
- Use **ASAM** criteria for level of care, with intensive outpatient or residential placement for patients facing unstable housing.
- Track outcomes with urine drug testing tied to incentives, plus validated craving, psychiatric, and functional status measures.

CLINICAL PEARLS

- Contingency management outperforms every medication studied for stimulant use disorder.
- Psychosis persisting a month past abstinence points to a primary psychotic disorder.
- Craving incubates: warn patients that week 6 can feel worse than week 1 did.

References

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NOTE

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