TOPICS

- Prevalence
- Prenatal Concerns
- Postpartum Concerns
- Basic Science
- Key Clinical Points
- Management of Methamphetamine Intoxication During Pregnancy
- Withdrawal
- Recovery
After cannabis, methamphetamine is the most abused illicit drug worldwide.

Recreational use of methamphetamine and other amphetamine-derived stimulants has reached epidemic proportions in the United States, Southern Asia, the Philippines, and Japan.

Approximately 5 percent of the United States population has used methamphetamine in their lifetime.

An estimated 500,000 people use methamphetamine in a given month.
Amphetamine-Related Hospitalizations in the United States

Amphetamine-Related Hospitalizations by US Census Region
Pregnancy

- Growth Restriction
- Low Birth Weight
- Placental Hemorrhage
- Management of Acute Intoxication
- Polysubstance Use
- Mental Health and Medical Comorbidity

Postpartum

- Withdrawal Syndrome
- NAS
- Breastfeeding
- Recovery
- Social Work
- Mental Health and Medical Comorbidity
Stimulant Drug Class

- Methamphetamine
- Cocaine
- Amphetamine Adderall
- MDMA Ecstasy
- MDPV Bath Salts
- MCAT Mephedrone

Methamphetamine Action

- **Stimulate**
  - Methamphetamine acts by stimulating brain cells to release neurotransmitter molecules
  - Neurotransmitter Molecules
    - Epinephrine
    - Norepinephrine
    - Serotonin
    - Dopamine

- **Inhibit**
  - Methamphetamine also inhibits re-uptake of neurotransmitter molecules

- **Double Effect**
  - Surge of Adrenergic Receptor Stimulation
Neurotransmitter Action

1. Epinephrine  
   Norepinephrine  
   • Hypertension  
   • Tachycardia  
   • Hyperthermia  
   • Vasospasm

2. Serotonin  
   • Alterations in Mood  
   • Deranged Responses to Hunger and Thirst

3. Dopamine  
   • Affects Drug-Craving and Drug-Seeking Behavior as well as Psychiatric Symptoms

Onset of Action  
• Seconds-Minutes

Peak Plasma Concentration  
• 30-180 Minutes

Plasma Half-life  
• 12-34 Hours

Duration of Action  
• Beyond 24 hours
Positive Effects

- Attention
- Fatigue
- Activity

- Wakefulness
- Appetite
- Euphoria Rush

Negative Effects

- Hypertension
- Tachycardia
- Hyperthermia

- Arrhythmia
- Seizure
- Agitation

- Hallucination
- Paranoia
- Psychosis
Key Clinical Points

Methamphetamine has become the most common illicit substance of abuse requiring medical treatment during pregnancy.

Methamphetamine ingestion results in significant CNS penetration and leads to indirect sympathetic activation through the release of epinephrine, norepinephrine, dopamine, and serotonin.
Significant cardiovascular effects are vasoconstriction, tachycardia, and labile blood pressure

Patients are typically hypertensive, although catecholamine depletion over time can result in hypotension

Arrhythmias and myocardial ischemia can occur

Hemorrhagic stroke has been reported

In the setting of acute methamphetamine intoxication, the ensuing seizures, severe hypertension, and hyperthermia can be fatal

Treatment goals include provision of a calm environment, with or without a benzodiazepine, and airway protection

Active cooling, antihypertensives, and anticonvulsants should be used as needed
Methamphetamine-induced seizures can masquerade as eclampsia

Methamphetamine withdrawal causes fatigue, depression, hunger, and intense cravings

Breastfeeding is not recommended for women with ongoing methamphetamine use

Social work consult should be ordered for all patients

False positive urine toxicology for methamphetamine may be caused by ephedrine administered during labor
Best Practice Guidelines
Methamphetamine Intoxication During Pregnancy

Agitation

Acutely intoxicated patients may become extremely agitated

Treat severely intoxicated patients immediately with intravenous or intramuscular benzodiazepines

Physical restraints should be avoided if possible
Hypertension

Avoid medication with beta-blocking activity
Sedation is the mainstay of therapy

Labetalol
Benzodiazepines
Hydralazine
Nifedipine
Seizures

Seizures caused by acute methamphetamine intoxication are usually brief and self-limited, and do not require medical therapy.

Prolonged seizures are treated initially with benzodiazepines.

Institute Magnesium Sulfate therapy if eclampsia is suspected.

Avoid pre-term or operative delivery by way of accurate diagnosis and treatment.

Phenytoin
Diazepam
Midazolam
Magnesium Sulfate
Hyperthermia

Control of hyperthermia (temperature ≥41.1°C/106 F) involves eliminating excessive muscle activity and aggressive cooling.

Increased body temperature in this setting arises from muscular activity, not an alteration in the hypothalamic temperature set point.

Antipyretics have no role in the management of hyperthermia due to methamphetamine intoxication.

Antipyretics
Sedation
Aggressive Cooling
Tachycardia

Although tachycardia is common among patients intoxicated with methamphetamine, heart rates are usually in a range that is well tolerated in the short-term.

Benzodiazepine therapy often reduces CNS catecholamine release sufficiently to produce an adequate reduction in heart rate.

Should additional rate control be needed, treat with a calcium channel blocker such as Diltiazem.

Beta-blockers
Benzodiazepine
Cardiac Arrest

Some patients with severe methamphetamine intoxication will sustain sudden cardiovascular collapse.

No predisposing factors rigorously predict collapse, but the clinician should anticipate clinical deterioration and cardiac arrest in any wildly agitated patient, particularly those requiring physical restraints.
Withdrawal

Dysphoria
Anhedonia
Fatigue
Increased Sleep
Insomnia

Agitation
Anxiety
Depression
Drug Craving
Increased Appetite
Recovery

Individual Counseling
Family Therapy
Group Psychotherapy
Crystal Meth Anonymous
Contingency Management

Thank You!
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