

# **Management of Pregnant Women with a History of Addictions/Substance Abuse**

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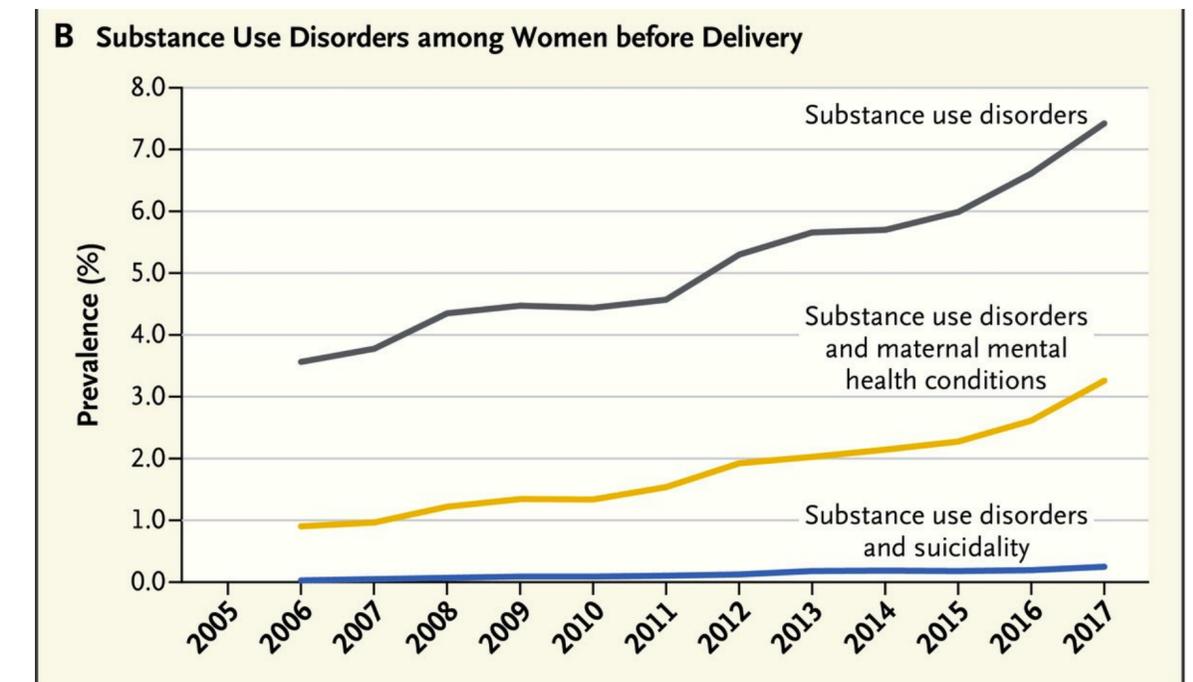
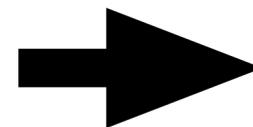
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# INTRODUCTION

- A prevalent public health concern
- 5% of pregnant women in the United States

Substance use can have detrimental effects on both the mother and the baby, impacting their physical health, development, and overall well-being.

- drug abuse
- physiological changes of pregnancy
- pathophysiology of pregnancy-related disease



- poor fetal outcome
- serious maternal morbidity (placental abruption)

# INTRODUCTION

- IV drug abusers:
- IV access may be difficult
- prevalence of transmissible diseases:  
hepatitis, HIV



This presentation delves into the impact of addiction in pregnant mothers, specifically examining the effects of various illicit drugs and their influence on labor complications.

**ALCOHOL**



- Alcohol is a known teratogen: birth defects, developmental impairments
- Fetal alcohol spectrum disorders (FASDs)
- Alcohol consumption during pregnancy can increase the risk of:
  - miscarriage
  - premature birth
  - low birth weight
  - alcohol-related complications in the baby
- During labor, alcohol can further impair the mother's coordination and ability to push effectively leading to prolonged labor and increased risk of cesarean section.
- Alcohol use can also contribute to postpartum hemorrhage.

## Acute alcohol intoxication

- fetal distress
- maternal pulmonary aspiration



## Chronic alcohol abuse

- liver disease
- coagulopathy
- cardiomyopathy
- drug metabolism



## Acute alcohol withdrawal

- fetal distress
  - autonomic instability
  - seizures
  - cardiac failure
- benzodiazepines/  
alpha-2 agonists  
(clonidine)
  - risk of neonatal  
respiratory depression

# OPIOIDS



- Opioid use disorder (OUD) is a chronic condition characterized by dependence on opioid drugs.
- Opioids readily cross the placenta and enter the baby's bloodstream, putting the fetus at risk of neonatal abstinence syndrome (NAS).
- During labor, opioid use can slow down contractions, making labor more prolonged and increasing the risk of complications such as fetal distress and cesarean section.
- Opioid use during pregnancy can increase the risk of preterm birth, low birth weight, and sudden infant death syndrome (SIDS).

- Withdrawal syndrome can occur within 4-6 hours of heroin use.
- Withdrawal → sympathetic NS activity → tachycardia, hypertension, restlessness

### Recurring placental/fetal opioid withdrawal:

- IUGR
- placental abruption
- fetal death
- preterm labor

### Maternal overdose:

- respiratory depression
- respiratory arrest
- aspiration

Polysubstance abuse, and infection with hepatitis B, C and/or HIV

ultrasound to aid peripheral IV access/  
central venous access

- Postoperative pain: exaggerated- difficult to control
- Maintenance + 'as required' opioids

### Non-pharmacologic approaches:

- ice pack
- heating pad
- local anesthetic application to the perineum
- transverse abdominis plane (TAP) blocks

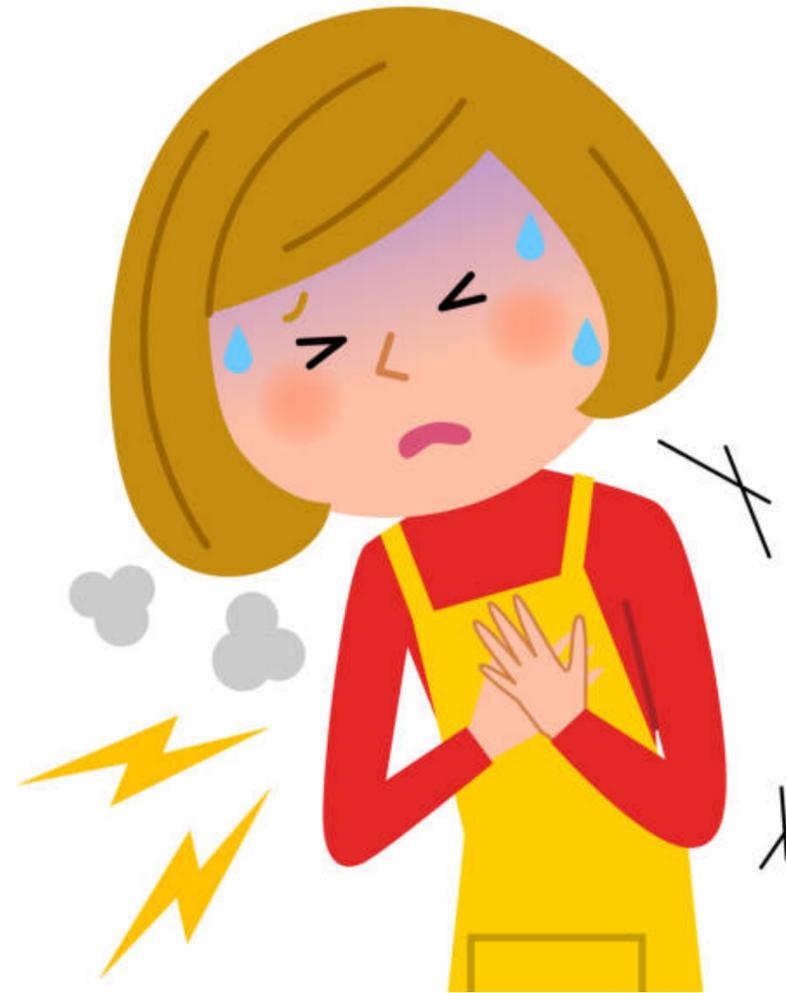
- Acetaminophen: 650 mg q6h by mouth
- Ibuprofen: 600 mg q6h by mouth
- If unsuccessful: ketorolac: 15 mg/30 mg IV/IM q6h for 48 hours
- Epidural morphine if there is a significant laceration repair
- A short course of low-dose opioids

# COCAINE



- A stimulant drug.
  - Commonly used in pregnancy in developed countries
  - Not specific to any particular cohort
  - Often co-abused
  - Cocaine constricts blood vessels, increases blood pressure, and elevates heart rate.
  - Restrict blood flow to the placenta:
    - Preterm Birth
    - Low Birth Weight
    - Birth Defects: heart defects, brain abnormalities
    - Fetal Distress: interferes with fetal oxygen supply
    - Cesarean Section
- 4-fold increase in rates of emergency caesarean section following **placental abruption** and **fetal distress**

- Cardiovascular sensitivity to cocaine in pregnancy → myocardial oxygen demand:
  - myocardial ischemia
  - infarction
  - arrhythmias
- Respiratory complications:
  - asthma
  - pulmonary hemorrhage
  - nasal septal collapse



# **AMPHETAMINES**



- A class of stimulant drugs
- Increase blood pressure, heart rate, and respiratory rate
- Amphetamines can cross the placenta and enter the baby's bloodstream.
- Increased risk of miscarriage, premature birth, low birth weight, and birth defects.
- Babies born to those mothers may experience withdrawal symptoms after birth.
- **Methamphetamine**: most commonly abused drug in this class
- Acute intoxication → hypertension, seizures, hyperreflexia → mistaken for **pre-eclampsia**
- Fetal and placental complications due to vasoconstriction → uteroplacental blood flow:
  - IUGR
  - placental abruption
  - preterm labor

# MARIJUANA



- The most commonly abused drug in pregnancy after tobacco and alcohol
- Commonly available
- Now legal in many jurisdictions
- Varies in potency
- A psychoactive drug
- Maternal marijuana: impair the baby's growth and development, leading to lower birth weight, smaller head circumference, delayed development, IUGR, preterm labor
- Babies born to mothers who use marijuana: risk of behavioral problems and attention deficit hyperactivity disorder (ADHD)
- During labor: risk of premature rupture of the membranes and prolonged labor
- Increase the risk of miscarriage and stillbirth.

- low doses: sympathetic activity
- high doses: parasympathetic activity → bradycardia/hypotension

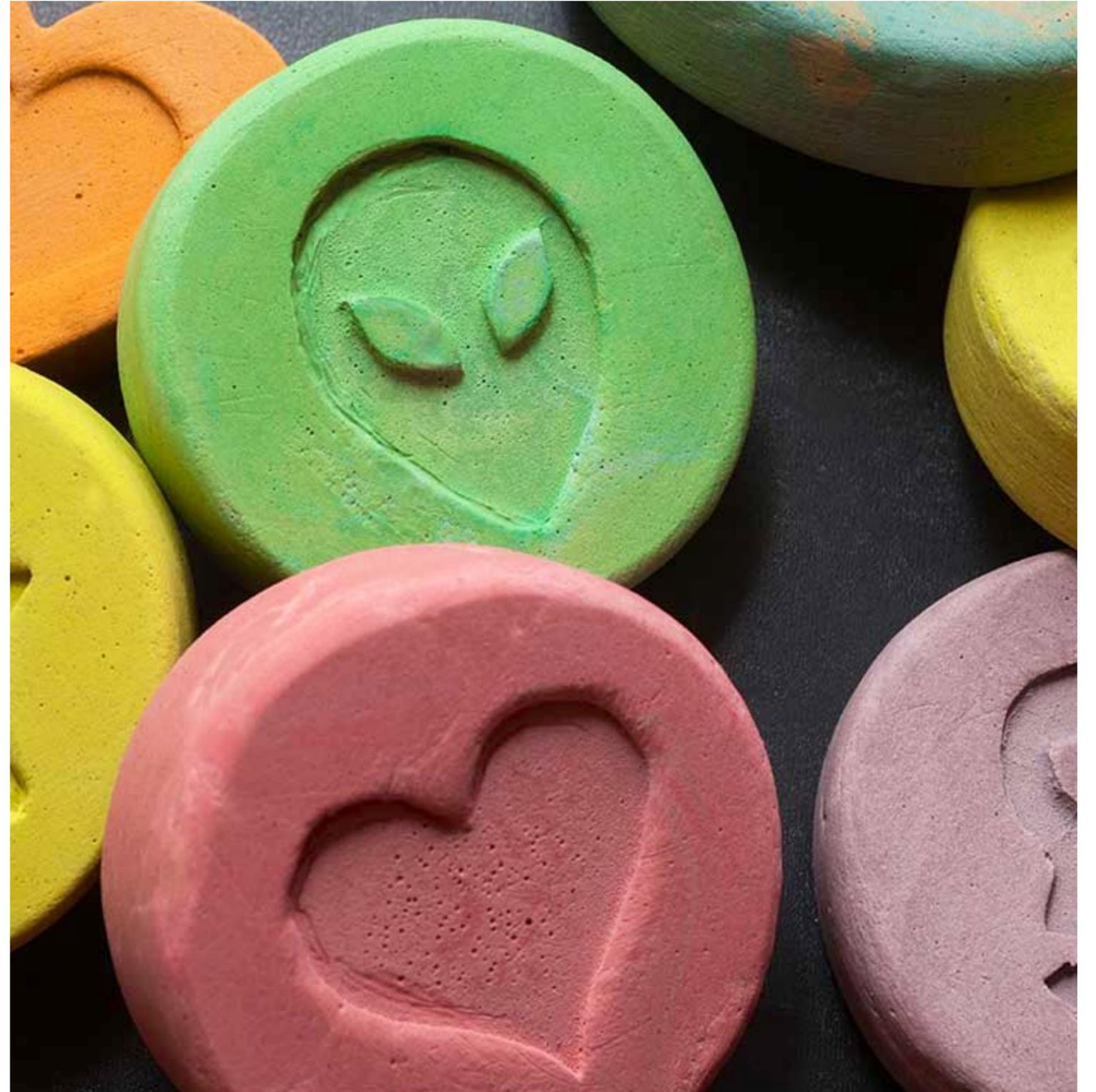
Acute intoxication:

- affects cognitive/motor performance
- ST and T wave changes
- supraventricular/ventricular ectopic activity

Analgesic effect is related to dose of marijuana:

- low doses: do not affect pain levels
- moderate doses: reduce pain scores
- high doses: increased pain

# **KETAMINE AND OTHER HALLUCINOGENS**



- **Ketamine** is a dissociative anesthetic that can cause:

- birth defects
- premature birth
- low birth weight
- fetal distress and death

- Ketamine
- lysergic acid diethylamide (LSD)
- phencyclidine (PCP)
- Psilocybin mushrooms 'magic mushrooms'

- **Mushrooms** contain psilocybin, a psychedelic drug that can cause:

- birth defects
- premature birth
- low birth weight
- fetal distress and death



### Overdose:

- respiratory depression
- seizures/coma
- water intoxication (LSD induced thirst) → pulmonary/cerebral edema, electrolyte abnormalities
- hypertension/proteinuria +/- seizures (mistaken for pre-eclampsia)
- hyperthermia: maternal/fetal oxygen demand → fetal heat-induced neurological injury

### Stimulate the SNS:

- hyperthermia
- hallucinations
- anxiety
- labile blood pressure
- tachycardia
- coronary/cerebral vasospasm

# Nicotine



- Nicotine readily crosses the placenta- concentrations in the blood of the fetus can be **15% higher** than in the mother.
- Smoking (even secondhand exposure) during pregnancy:
  - birth defects
  - premature birth
  - miscarriage
  - low birth weight
- For mother:
  - Lower oxygen levels
  - risk of heart-related complications after surgery
  - risk of post-surgical complications to the lungs
  - Delay healing, risk of infection at the wound site



# SUMMARY

Substance	Cardiac	Respiratory	Neurological	Coagulopathy	Management
Alcohol	Autonomic instability	Reduced airway reflexes	-Depression -Seizures	Potentially	-Treat withdrawal -Neuraxial > GA
Opioids	Raised SNS stimulation if withdrawing	Depression	-Depression -Neuraxial infections (in intravenous drug abusers)	Potentially	-Neuraxial > GA -Increase neuraxial opioid dose -Multimodal analgesia
Cocaine	Raised SNS stimulation	-Asthma -Pulmonary haemorrhage -Prolongs succinylcholine	-Mimics pre-eclampsia -Affects pain perception -Serotonin syndrome -Psychosis	Potentially	-Neuraxial > GA -Obtund hypertensive response to laryngoscopy -Avoid halothane & ketamine
Amphetamine	Raised SNS stimulation	Nil	-Mimics pre-eclampsia -Psychedelic -Serotonin syndrome	No	-Neuraxial > GA -Avoid halothane, desflurane & ketamine
Marijuana	-Initially raised SNS, then PNS predominates -Arrhythmias	-Oropharyngeal oedema -Bronchospasm -Prolongs succinylcholine	Psychosis	No	-Neuraxial > GA -If requires GA, consider intravenous prophylactic dexamethasone
Hallucinogen	Raised SNS stimulation	Prolongs effect of opioids and succinylcholine	-Hallucinations -Reduces MAC	No	Neuraxial > GA

# BREASTFEEDING



Generally advise not to breastfeed- lack of data on the correlation between concentrations in breast milk and effects on the infant.

caution is advised with **codeine** (CYP2D6 ultra-rapid metabolizers → high morphine metabolite levels)

### Exceptions:

- methadone: transfer to breast milk is low
- buprenorphine: concentration in breast milk is low
- alcohol abusers: daily intake limited to no more than 60 mL of liquor, 236 mL of wine, or two average beers for a 60 kg woman, nursing should take place at least 2 hours after drinking.



# References

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