Mass General Brigham

Compassionate, Evidence Based Care for Pregnant Patients with Substance Use Disorders

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September 2025

HARVARD MEDICAL SCHOOL

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OBSTETRICS & GYNECOLOGY

Disclosures

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I have no conflicts of interest to disclose

Objectives

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- ✓ **Discuss** the prevalence and clinical impact of substance use disorders in pregnancy
- ✓ **Identify** the effects of stigma and bias on care and apply principles of trauma informed practice
- ✓ **Review** evidence–based approaches for managing opioid, stimulant, alcohol, marijuana and benzodiazepine use disorders during pregnancy
- ✓ **Explain** the indications, limitations, and ethical considerations of toxicology testing

Substance Use, Stigma and Prenatal Care

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Substance Use in Pregnancy

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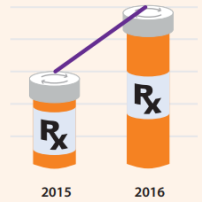
US Opioid Crisis: Addressing Maternal and Infant Health

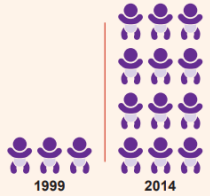
Opioid use disorder (OUD) can cause many negative health outcomes for mothers and their babies, both during pregnancy and after delivery. Infants can be born with breathing and feeding problems, and mothers are at risk of opioid-related overdoses. As part of its overarching five-point strategy to prevent opioid overdoses and harms, CDC is taking specific actions to prevent OUD among pregnant women and women of reproductive age and to make sure women with OUD get proper treatment.

The Toll



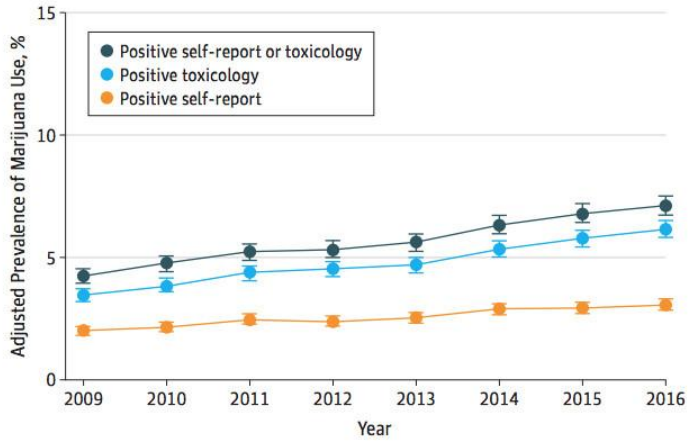
The rate of overdose deaths among women rose 20% in one year.

Opioid use disorder has gone up more than 4 times among pregnant women.



4 times as many infants were born with neonatal abstinence syndrome (NAS) in 2014 than in 1999.

Figure 1. Adjusted Prevalence of Marijuana Use Among 279 457 Pregnant Females in KPNC by Screening Type, 2009-2016



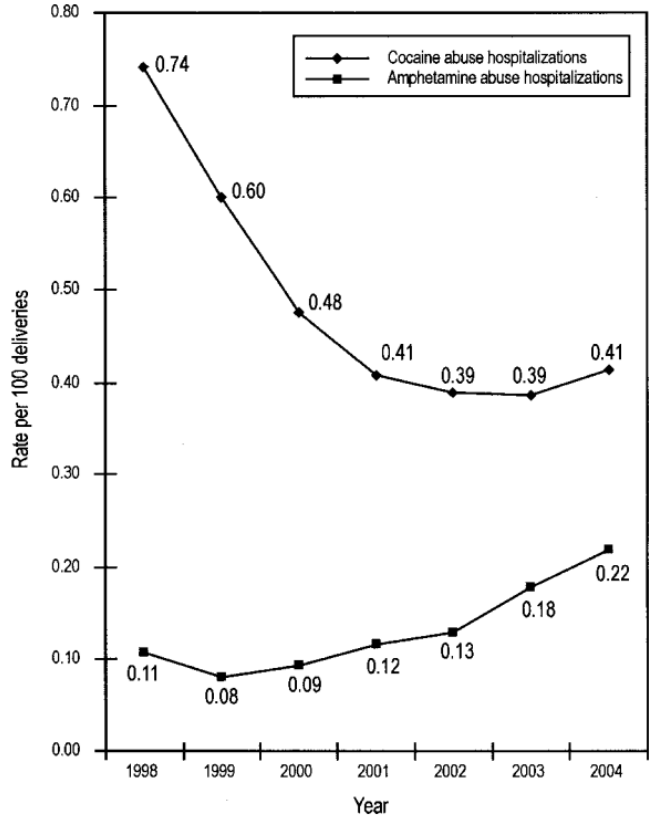


Fig. 1. Hospitalization ratios for amphetamine or cocaine abuse among pregnant women. The statistical test for linear trends is significant for both diagnosis groups ($P<.001$).

Cox. Amphetamine Abuse and Pregnancy. Obstet Gynecol 2008.

Substance Use in Pregnancy

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usetts General Hospital Hope Clinic in Boston, Mass., which provides
iting women with substance use disorders.

Politics, Policy, and Stigma have Profound Impacts on Care

The Words We Use Matter

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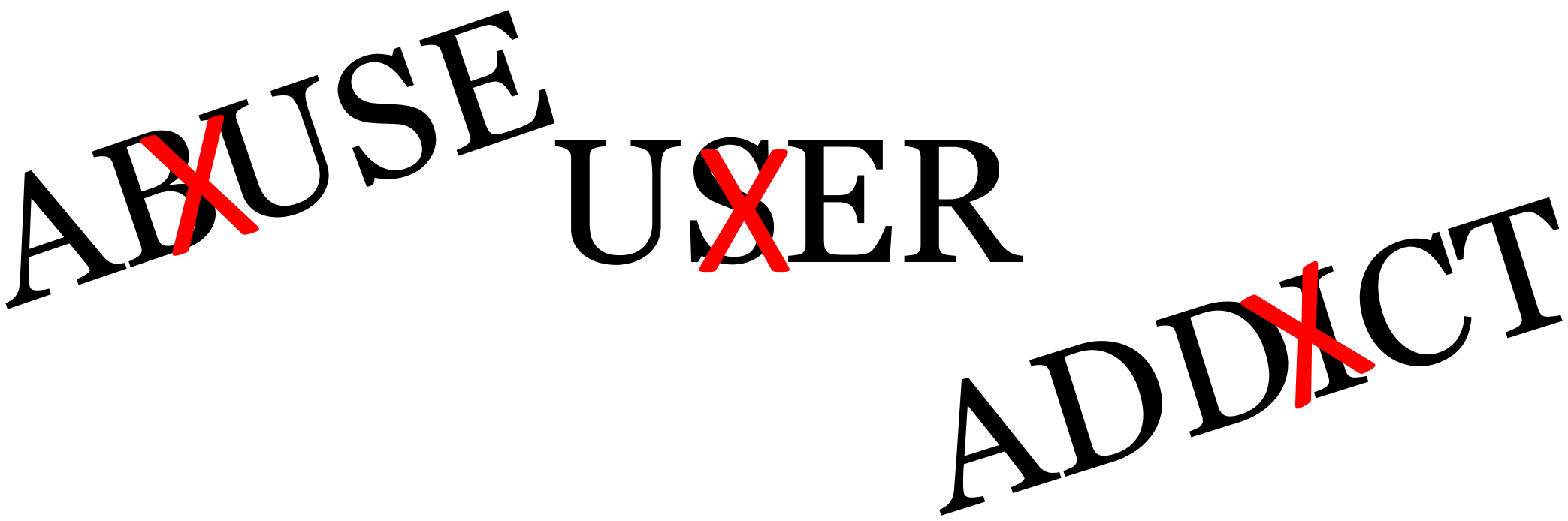

Trauma is Nearly Universal

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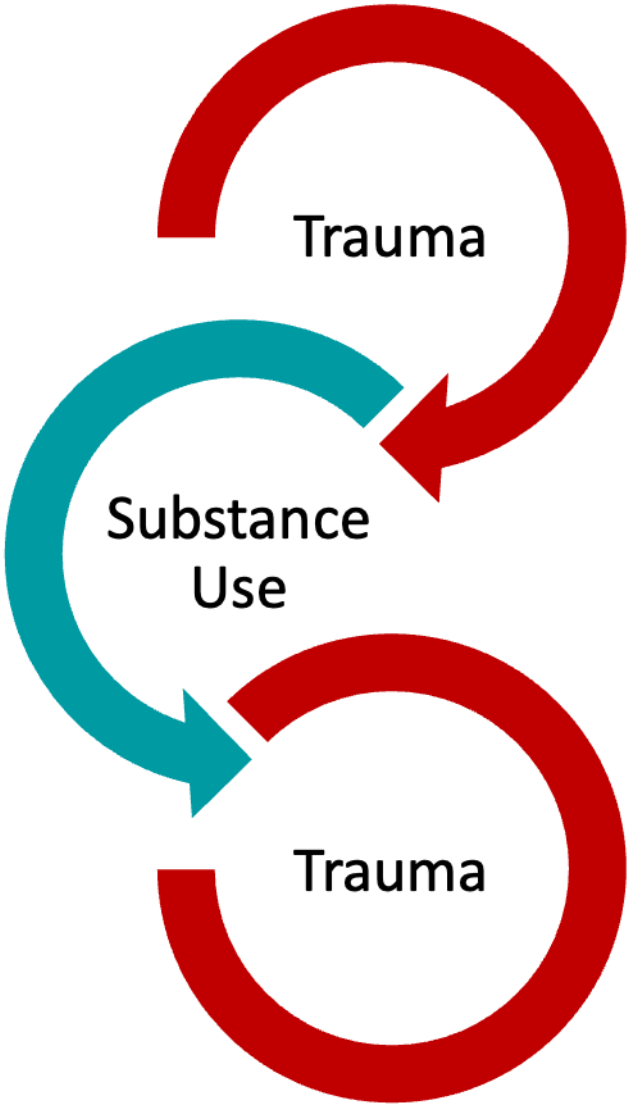
55 to 99% of women with substance use problems report history of physical and sexual abuse

Women with a **history of childhood sexual abuse**

- 60% more likely to have alcohol problems
- 70% more likely to have used illegal drugs



Najavits et al., 1997; Dube et al., 2005

Impact of Co-Existing Mental Health Conditions

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- Untreated or inadequately treated psychiatric illness may result in:
  - poor adherence to prenatal care
  - Exposure to illicit substances
  - Exacerbations of underlying illness

Because of fears of teratogenicity or adverse neonatal effects, patients or providers may discontinue psychiatrics meds in pregnancy

Society for Maternal Fetal Medicine Consult Series #54: Assessing the risk of maternal morbidity and mortality. April 2021

Substance Use and Adverse Outcomes

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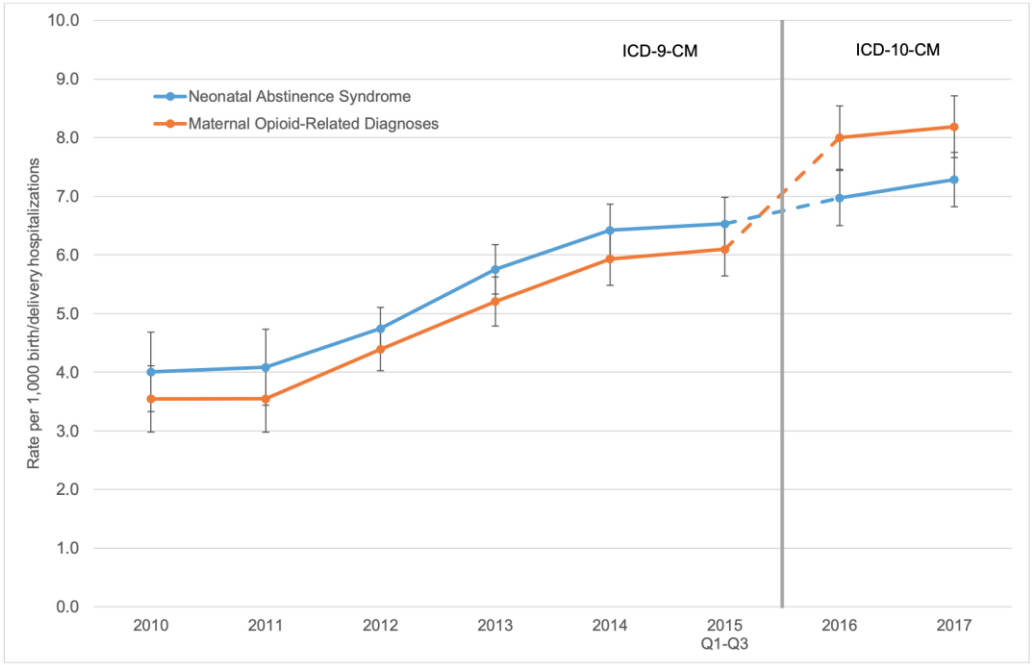
- Congenital Malformations
- Preterm birth
- Hypertensive Disorders
- Fetal Growth Restriction
- Placental Abruption
- Neonatal Withdrawal
- Maternal Sepsis
- Overdose
- Maternal Mortality

eFigure 1. Neonatal Abstinence Syndrome and Maternal Opioid-Related Diagnoses Rates per 1,000, 2010-2017



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, National Inpatient Sample, 2010-2017

Hirai AH et al. Neonatal Abstinence Syndrome and Maternal Opioid Related Diagnoses in the US 2010-2017. JAMA 2021.

What is the Driver for Adverse Outcomes?

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23,926 deliveries between 1983 and 1990 were analyzed
Patients with drug use had 203 times higher incidence of low birth weight and perinatal death
Drug use had minimal effect in those with 5 or more prenatal visits
Drug use with inadequate prenatal care was associated with 3 times higher incidence of perinatal death and low birth weight

- 6, 673 women residents of the DC were screened for drug use in the immediate postpartum period
- **The highest levels of LBW and prematurity occurred in infants of mothers with no prenatal care**
- **As PNC levels increased the levels of prematurity and LBW decreased**

Adequacy of prenatal care is a marker of "social chaos" and may affect outcomes more than the drug itself

Broekhuizen FF, et Al. Am J Obstet Gynecol 1992

EL-Mohandes A, et al. J Perinatol. 2003 Jul

Overdose is A Major Unrecognized Cause of Maternal Mortality

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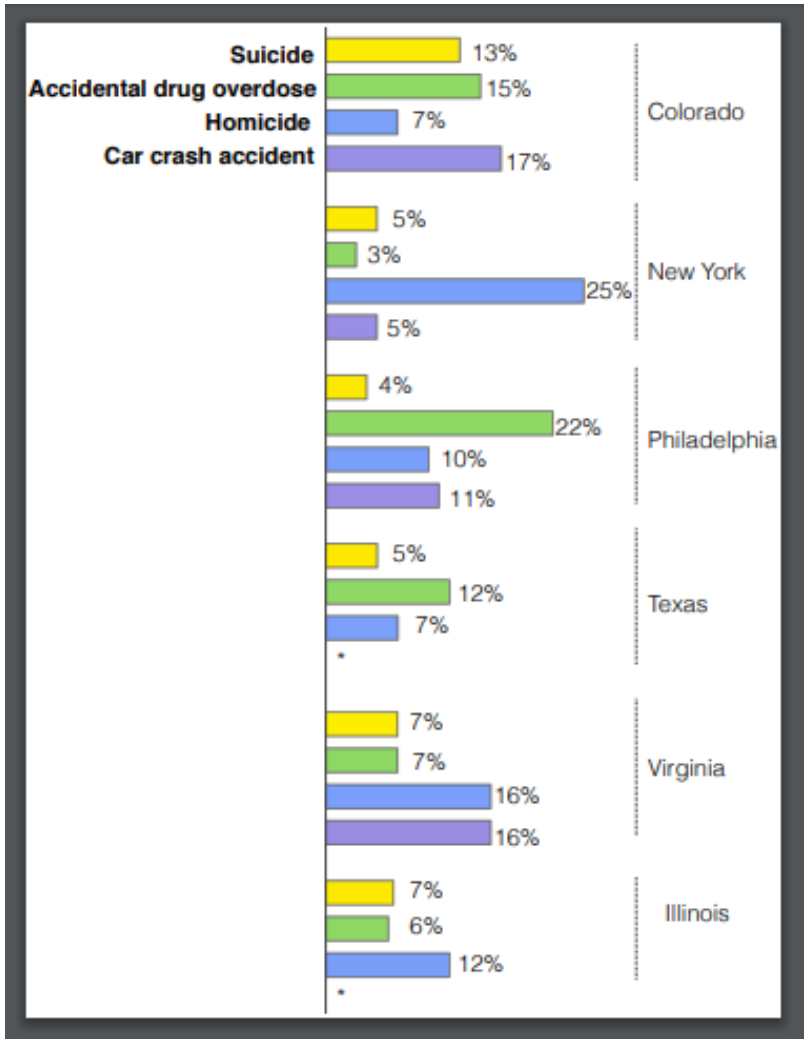
Self-harm previously not included in CDC statistics

Majority of maternal deaths 2/2 self harm occur in late postpartum period (>42d post delivery)



Risk Factors:

- Major Depression
- Substance Use
- Intimate Partner Violence

Mangla K, et al. American Journal Of Obstetrics and Gynecology 2019

Opioid Overdose Rates Among Pregnant and Postpartum Women with OUD in Massachusetts (2011-2015)

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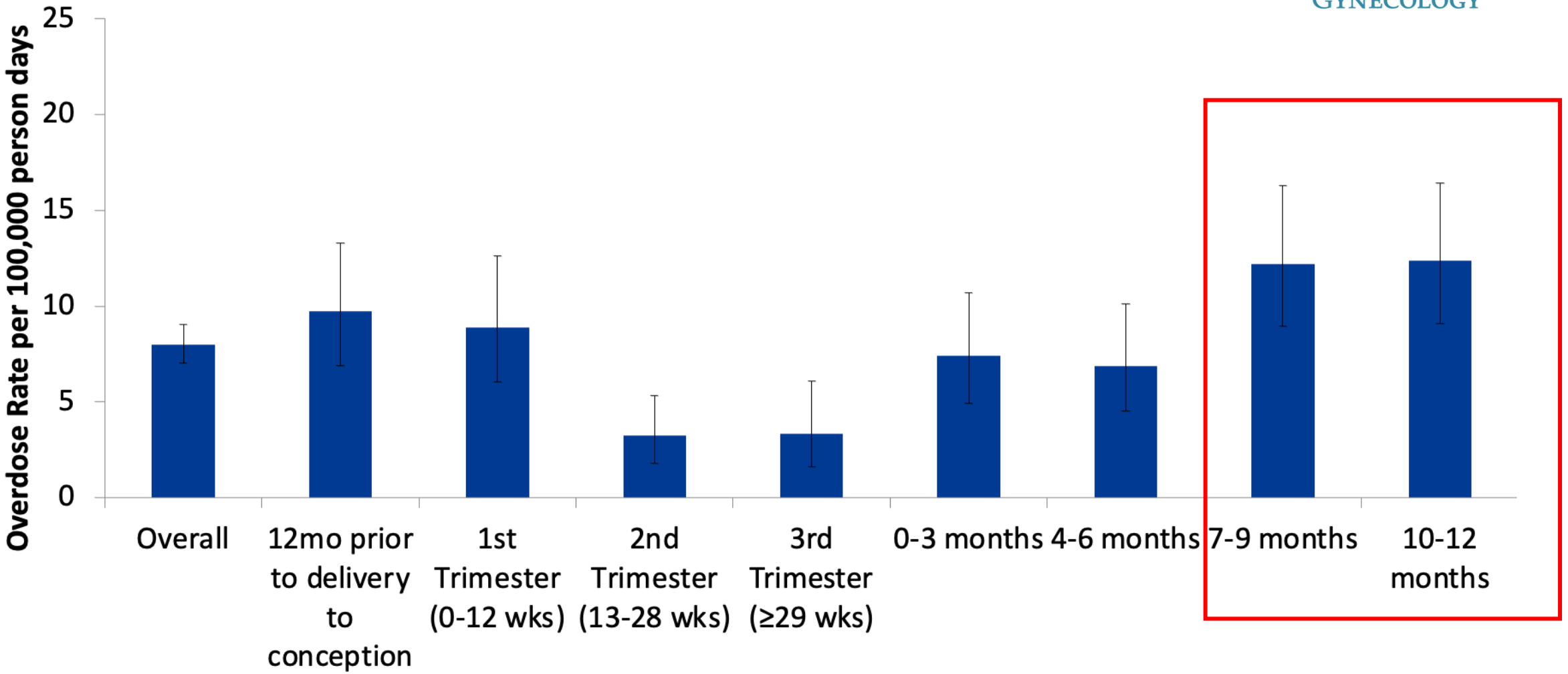

(n=4184)

Schiff et. al, *Obstetrics and Gynecology, 2018*

Barriers to Accessing Comprehensive Quality Care for Birthing People with SUD

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Patient Level Barriers

- Stigma felt when interacting with the healthcare system
- Unmet basic needs (transportation, childcare, phone access)
- Fear of child protective service involvement

Physician Level Barriers

- Stigma of caring for stigmatized population
- Time and practice burdens
- Limited training and resources amongst OB providers

Systems Level Barriers

- Lack of behavioral health services
- Fragmentation/Lack of Care Coordination
- Lack of adequate safety set and social services
- Payment structures (insurance coverage, payers)

Adapted from: St. Louis, J et al. Barriers to care for perinatal patients with opioid use disorder: family physician perspectives. Family Practice. 2022.

SUD Care at MGH

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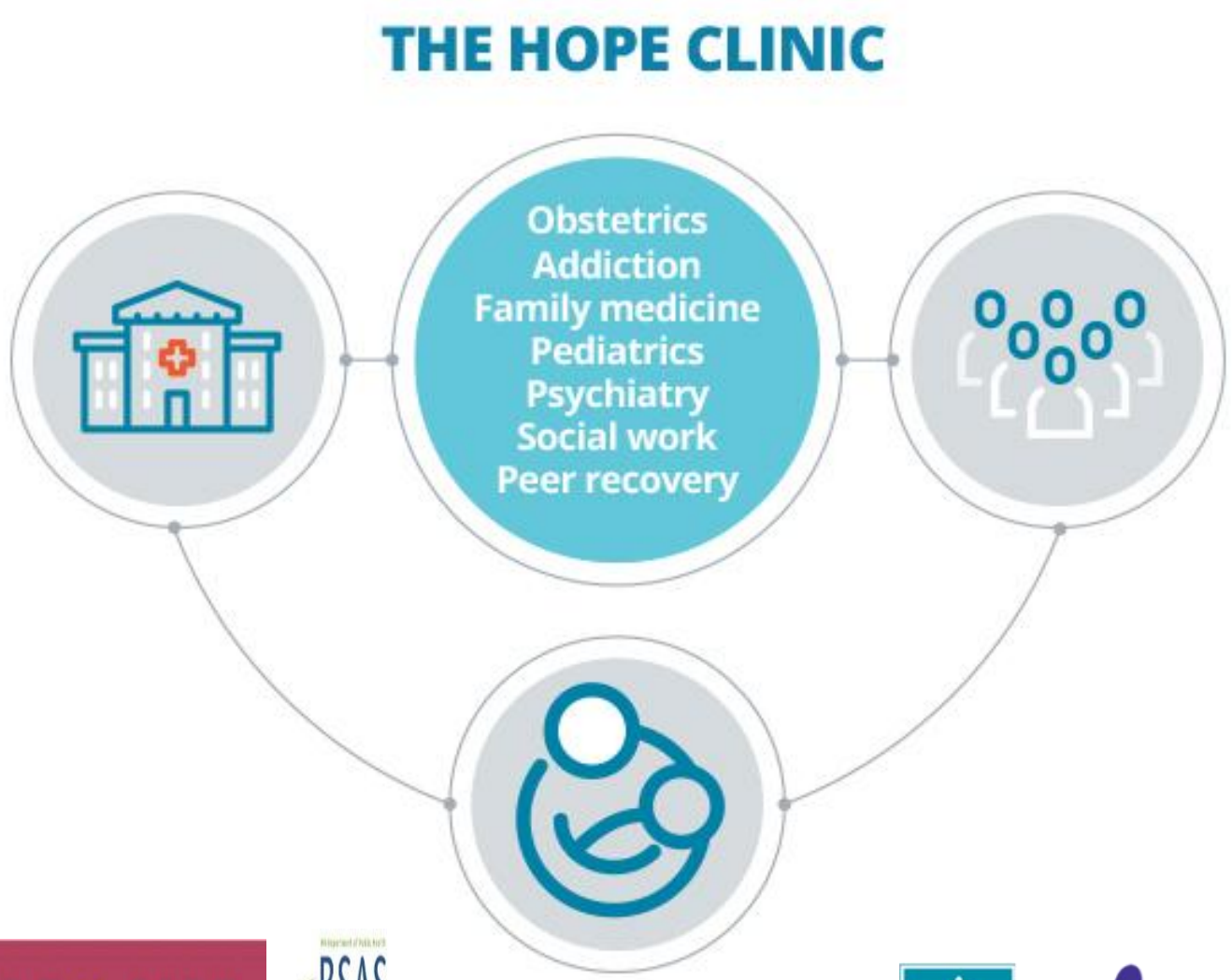

Continued Care for
2 Years Postpartum

SAMHSA Substance Abuse and Mental Health Services Administration www.samhsa.gov 1-877-SAMHSA-7 (1-877-726-4727)

MOMS DO CARE

BSAS

MGH 1811

MassGeneral Hospital for Children

VE RI TAS

Management of Opioid Use Disorders in Pregnancy

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Treatment Options

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Opioid Detoxification

Medications for Opioid Use Disorder

Standard of Care

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- Opioid Agonist Treatment with methadone or buprenorphine is the **standard of care** for treatment of Opioid Use Disorder (OUD) in pregnancy
  - Proven morbidity and mortality benefit
- Pharmacotherapy is preferable to medically assisted withdrawal because withdrawal is associated with high relapse rates which lead to worse outcomes

- ACOG Committee Opinion, 2017

ACOG The American College of Obstetricians and Gynecologists
World Health Organization
American Society of Addiction Medicine FOUNDED 1954 ASAM
Substance Abuse and Mental Health Services Administration SAMHSA www.samhsa.gov • 1-877-SAMHSA-7 (1-877-726-4727)
American Academy of Pediatrics DEDICATED TO THE HEALTH OF ALL CHILDREN®
CDC CENTERS FOR DISEASE CONTROL AND PREVENTION
AAFP

Opioid Detoxification During Pregnancy

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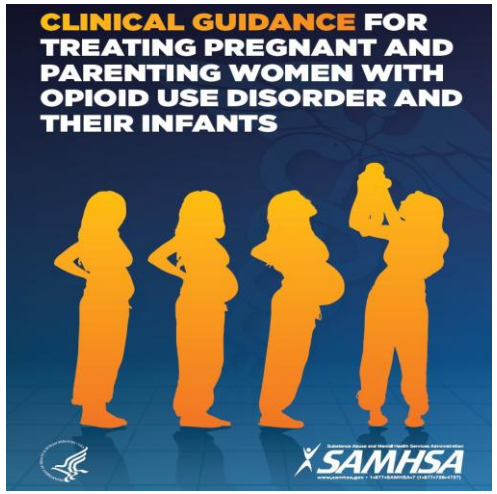
- Pregnant patients should be advised that withdrawal during pregnancy **increases the risk of relapse with no fetal or maternal benefit**
  - Low detox completion rates
  - High rates or relapse
  - Limited data regarding the effect of the detoxification on maternal and neonatal outcomes beyond delivery


Opioid Detoxification During Pregnancy
A Systematic Review

Mishka Terplan, MD, MPH, Hollis J. Laird, MPH, Dennis J. Hand, PhD, Tricia E. Wright, MD, MS, Ashish Premkumar, MD, Caitlin E. Martin, MD, MPH, Marjorie C. Meyer, MD, Hendrée E. Jones, PhD, and Elizabeth E. Krans, MD, MSc



(Terplan et al., 2018)

Respecting Patient Autonomy

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- Many people decline or want to discontinue their medications in pregnancy
- Avoid Assumptions– reasons may include:
  - Fear of child welfare involvement
  - Prior trauma from the healthcare system
  - Stigma or misinformation about MOUD
  - A strong desire for a “med free” birth or identity

How do we provide evidence-based medicine without coercion?

(Guille et al., 2019)

First Line Medication Treatment Options in Pregnancy

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1970s: Methadone

-**Gold standard**

-Prevents non-medical opioid use

-Improves prenatal care adherence

-Reduces OB complications

2010: Buprenorphine

-NEJM MOTHER Trial

-Secondary outcomes showed lower rates of tx for NAS, shorter hospitalizations

-Another **first line treatment option**

2023: Long Acting Buprenorphine (Brixadi)

-NIDA MOMS Trial

-Long-acting formulations can improve adherence

ACOG committee opinion 711: opioid use and OUD in pregnancy

The NEW ENGLAND JOURNAL of MEDICINE

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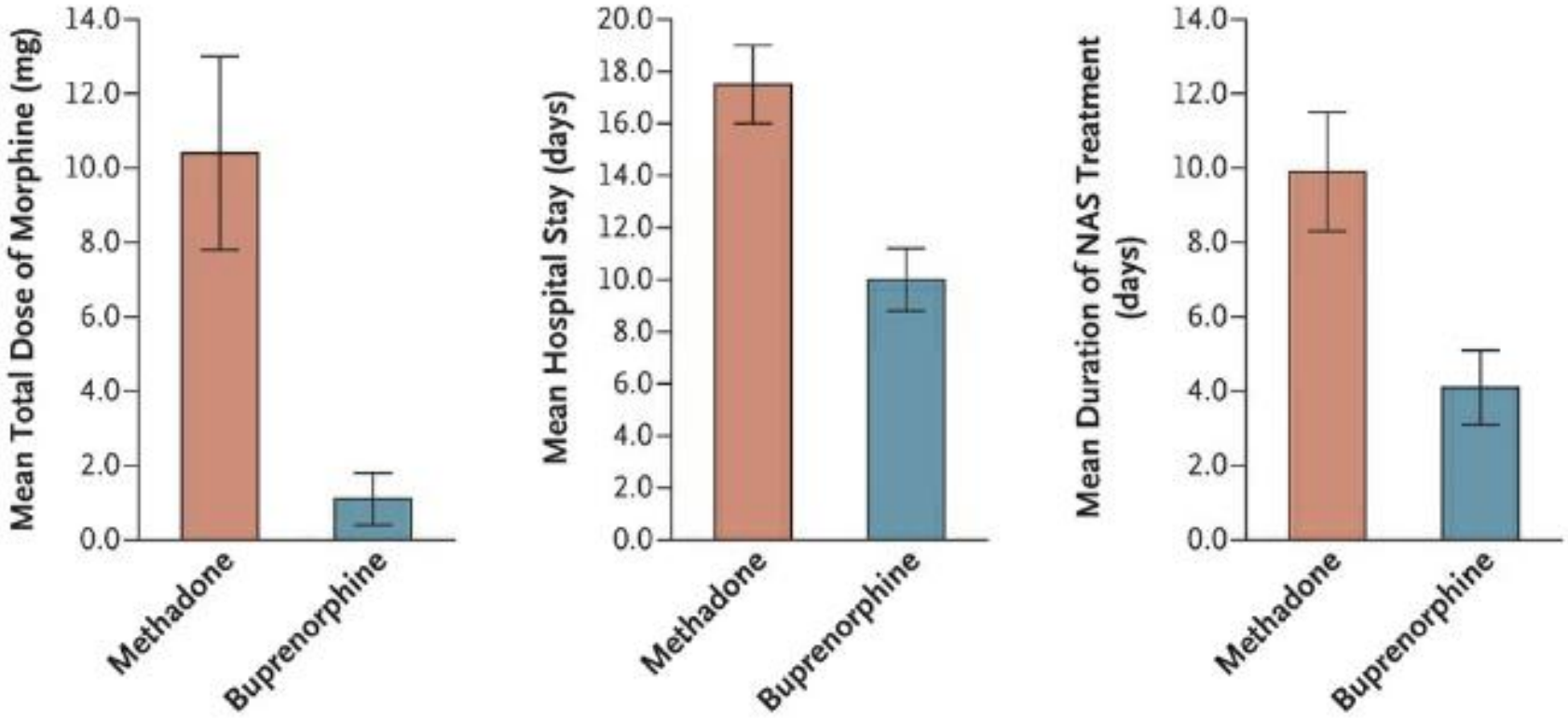
ORIGINAL ARTICLE

Neonatal Abstinence Syndrome after Methadone or Buprenorphine Exposure

Hendrée E. Jones, Ph.D., Karol Kaltenbach, Ph.D., Sarah H. Heil, Ph.D., Susan M. Stine, M.D., Ph.D., Mara G. Coyle, M.D., Amelia M. Arria, Ph.D., Kevin E. O'Grady, Ph.D., Peter Selby, M.B., B.S., Peter R. Martin, M.D., and Gabriele Fischer, M.D.



HE Jones et al. NEJM Dec 2010

Choosing an Opioid Agonist in Pregnancy

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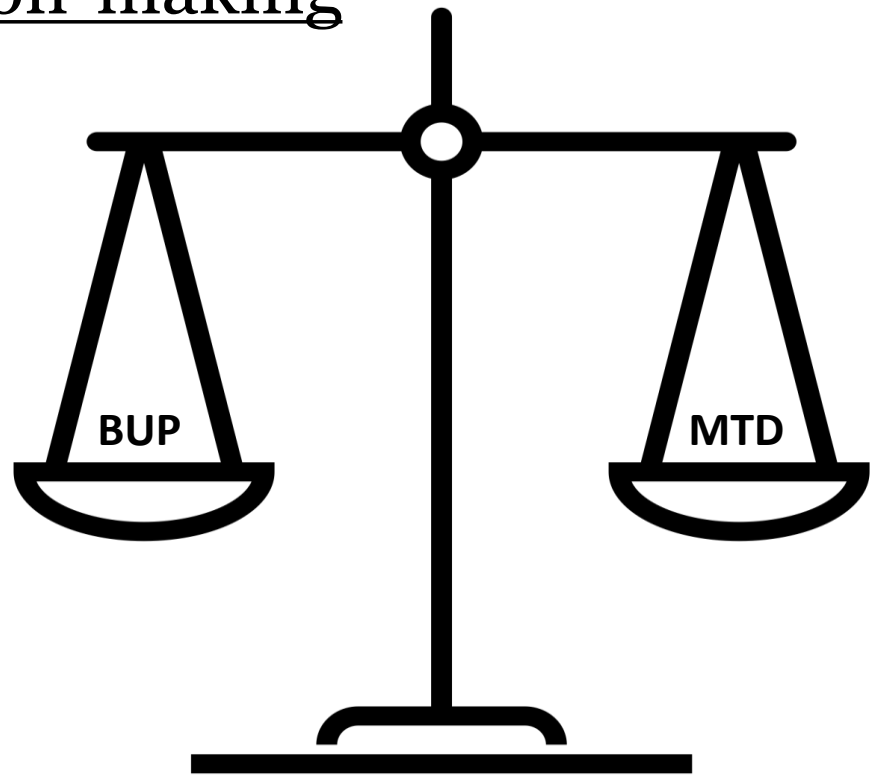
Practical considerations and shared decision-making

- Patient preference
- Access
- Transportation
- Drug supply
  - Fentanyl complicates initiation



Methadone

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Methadone Metabolism Increases in Pregnancy

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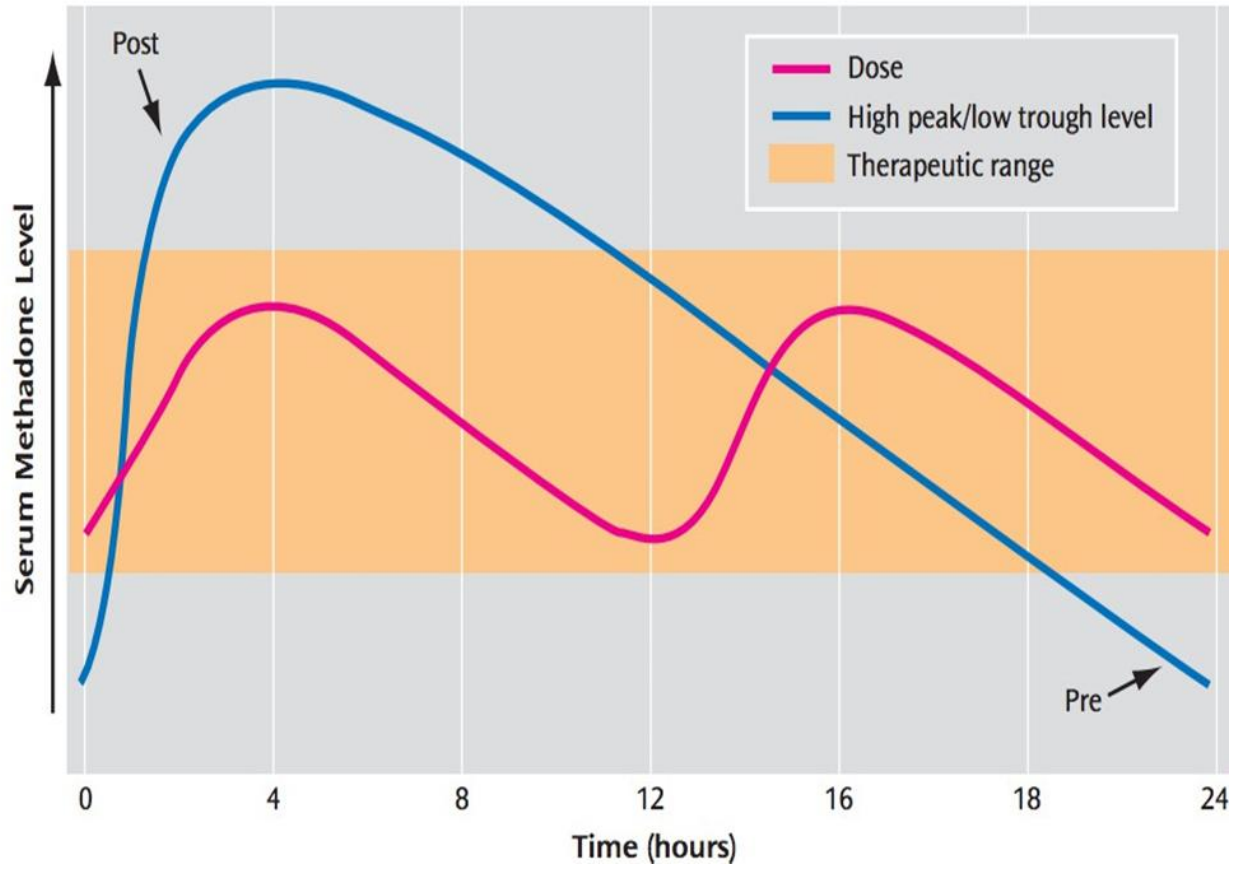
FIGURE 1. Methadone Split Dosing for the Treatment of Opioid Addiction



For maternal stability dose adjustments needed during pregnancy and postpartum

✓**Dose increases are due to changes in metabolism and not marker of disease severity**

✓**Offer women split dose in pregnancy to maintain therapeutic level**

Bogen 2013; Jarvis 1999 Shiu Can J Hosp Pharm 2012; McCarthy J Addict Med. 2015, 2018

Split Dosing Guidance for Pregnant Patients

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- Per 2022 SAMHSA guidance Methadone clinics no longer need to apply for split dose approval for pregnant patients
- Clinics must document the reason for split dosing (e.g., pregnancy physiology) in the chart
- Check in with your local clinics
- ***Ideally, split dosing should be initiated for all pregnant patients***

McCarthy et al. Changing Outdated Methadone Regulations That Harm Pregnant Patients. *Journal of Addiction Medicine2021*

Correspondence to OTP providers: **From:** Gurney, Michael (DPH) **Sent:** Wednesday, May 4, 2022 8:52 AM
Subject: Updated SAMHSA Guidance: Split-Dosing Take-Home Exception Requests, courtesy of Ruth Potee

Optimal Postpartum Methadone Dosing Challenges

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TOO HIGH

Oversedation
Overdose Risk
Safety Concerns

Complexities:

- Unknown return to pre pregnancy metabolism
- Some patients not at therapeutic dose before delivery
- Need for opioids for postpartum pain management

Withdrawal Symptoms
Destabilization
Return to Use

TOO LOW

No standard guidance for titration of methadone postpartum

Buprenorphine SL

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Buprenorphine Safety in Pregnancy

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- Less safety data available for first trimester exposure compared to methadone

- No studies have shown increased concerns for birth defects

- Long-term neurodevelopmental outcomes remain unstudied

- Possibly lower risk of NAS/NOWS than methadone
  → This may reflect differences in patient populations more than drug effects

Sublingual Buprenorphine: Mono vs Combo Product

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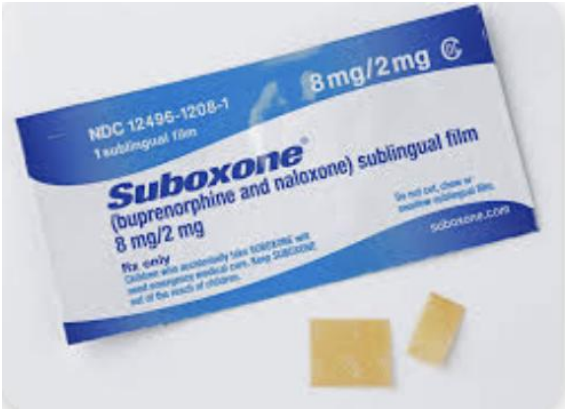
Evidence Summary:

- Meta-analysis: 5 retrospective studies with bup/nal
- No significant differences in outcomes observed
- More prospective data needed on teratogenicity

Practical Considerations:

- Switching formulations may destabilize patients
- Risks: diversion, coercion, prior shortages
- Patients may have strong preferences
  - Many programs only offer combo product
  -At our institution we offer an informed choice



***No compelling data that suboxone is unsafe in pregnancy**

Link, et al., 2020

Buprenorphine Metabolism in Pregnancy

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Physiologic Changes:

↑ CYP3A4 enzyme activity (~38%)
↑ Volume of distribution
↑ Drug clearance
↓ Time to trough concentration

Clinical Impacts:

Plasma levels are ~50% lower during pregnancy
Doses may need to exceed 32 mg/day

No link between buprenorphine dose and NOWS risk in newborns

Grancde, et al. Evidence of Buprenorphine Dose Limits: A Review, J Addict Med 2023

Buprenorphine Dosing Frequency in Pregnancy

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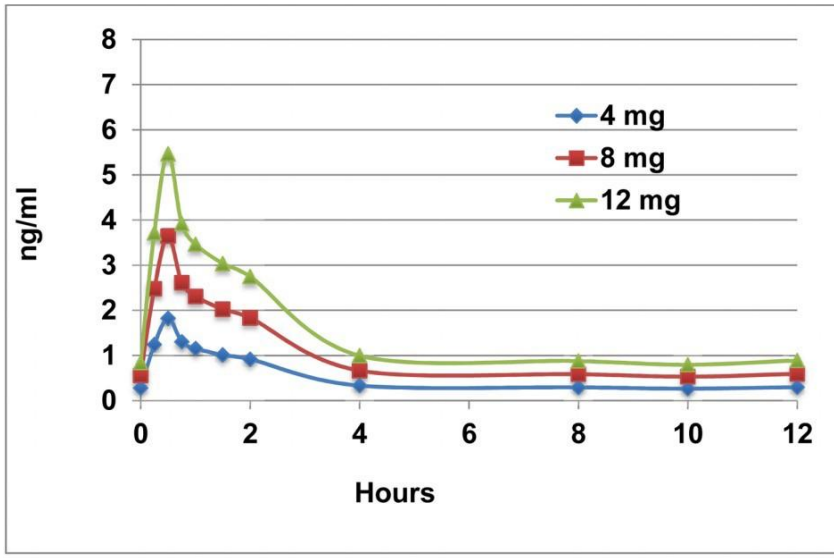
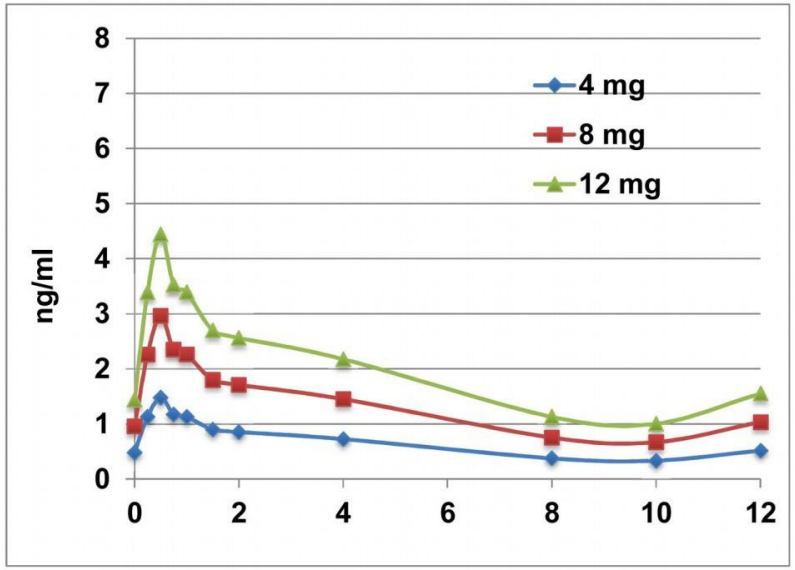
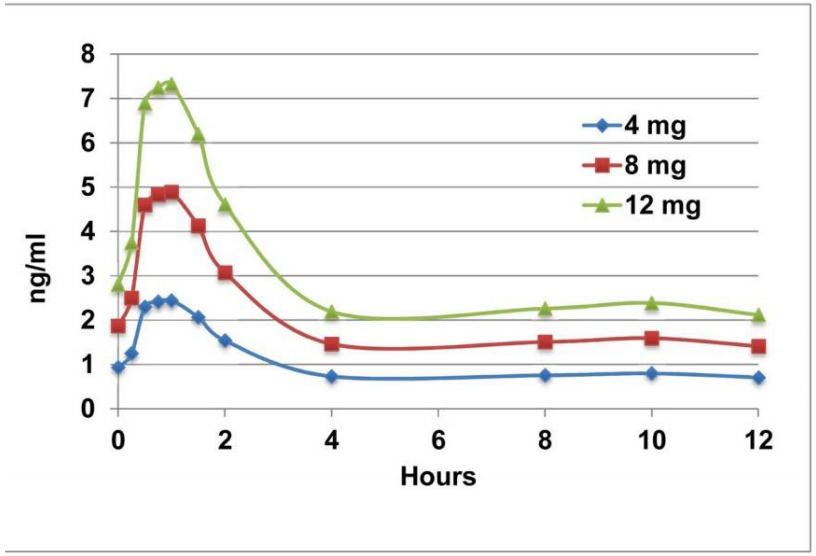
- As pregnancy progresses once-daily dosing plasma concentrations dip below 1ng/ml*
- Postpartum this shift is reversed
- Argues for dividing dose during day for more consistent plasma concentrations and maternal stability



2nd trimester



Third Trimester



Postpartum

newer data suggesting need serum levels of 2- 3ng/mL (Greenwald)

Caritis et al AJOG 2017

Long -Acting Injectable Buprenorphine in Pregnancy

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Benefits of Long Acting SQ Buprenorphine in Pregnancy

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- Overcomes barriers to treatment
- Provides steady state of continuous buprenorphine
- Higher serum levels possible given current SL prescribing barriers
- Avoids intolerance to sublingual formulation, often pronounced in pregnancy
- Eliminates need for medication storage at home improving safety

Formulations and Safety in Pregnancy

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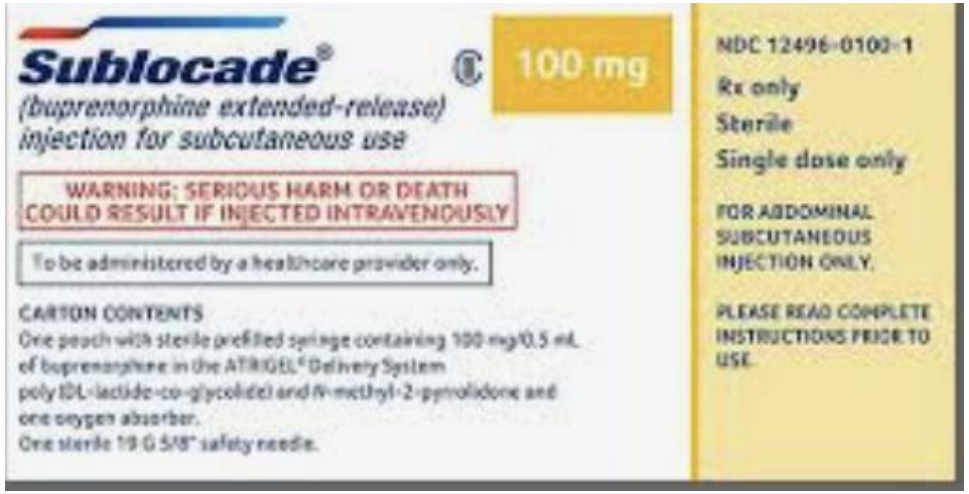
NMP +++



- Previously contraindicated in Pregnancy due to concerns about NMP excipient
- FDA label revised May 2025
- Recommend shared decision-making

NMP ++

- Monthly formulation for postpartum use
- Shared decision-making regarding use in pregnancy

NO NMP-optimal choice

Weekly formulation for use in pregnancy

Buprenorphine Concentrations in Pregnancy with SL vs Long acting SQ Weekly Brixadi

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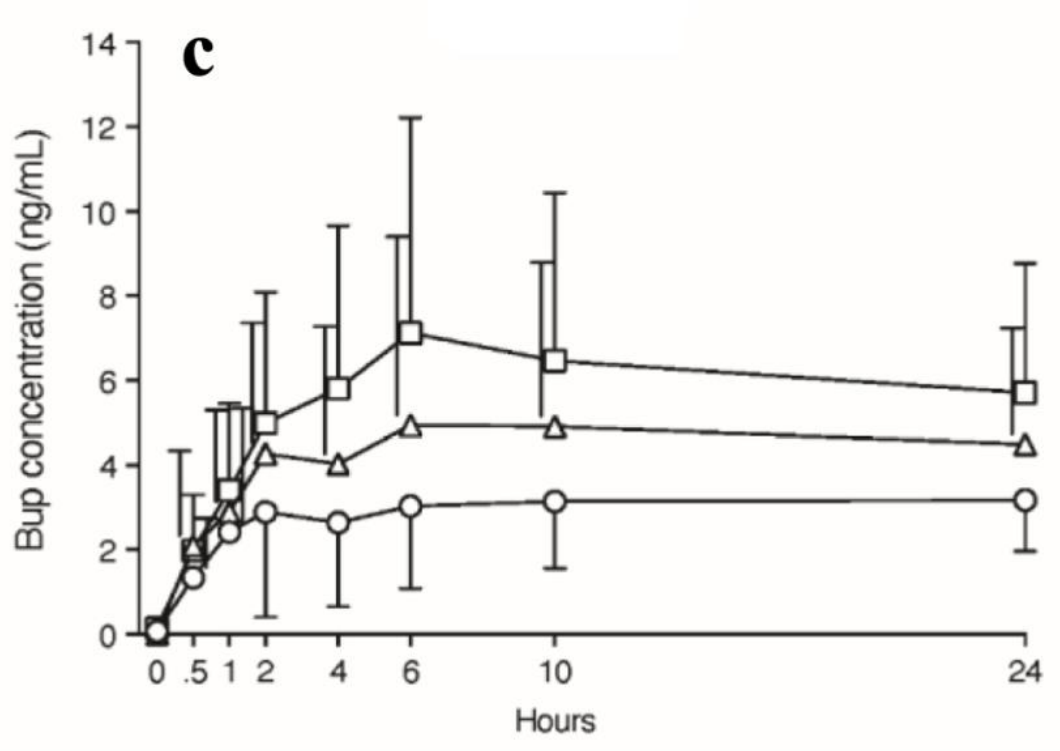

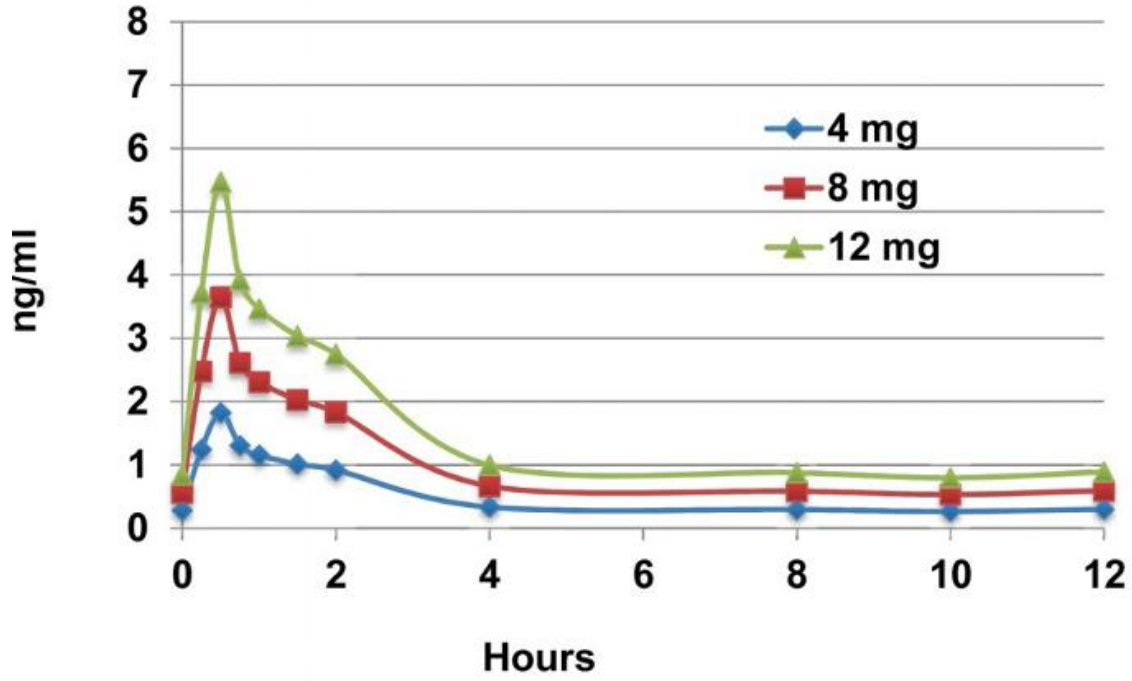

Long Acting Weekly SQ Buprenorphine (Brixadi)

Lowfall 2023 Caritis 2017

newer data suggesting need serum levels of 2-3ng/mL (Greenwald)

Sublingual Buprenorphine

IM Naltrexone: Second Line Treatment in Pregnancy

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Naltrexone: Second Line Option in Pregnancy

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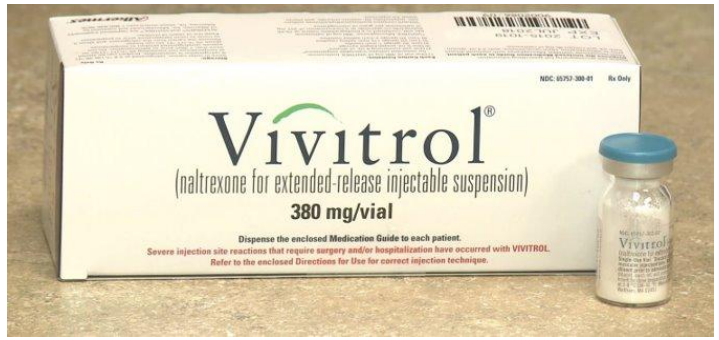
- Appealing to some patients due to lack of NOWs
- Second line due to lack of high-quality US studies on humans
- Individualize based on risks/benefits
- Due to pain control needs at delivery recommend transitioning to PO formulation at 35-37 weeks



Breastfeeding in Women on Opioid Agonist Therapy

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- Breastfeeding should be ***encouraged*** in women who are stable on agonist therapy unless other medical contraindications exist
- <u>Benefits</u>:
  - Decreased rates of Neonatal Withdrawal [1]
  - Improved Mother/Infant Attachment [2]

ABM ACADEMY OF Breastfeeding Medicine

ACOG The American College of Obstetricians and Gynecologists

1. Abdel-Latif ME et al. 2. Pediatrics 2006 Jansson et al. Pediatrics 2008,

Prenatal Alcohol Exposure and Pregnancy

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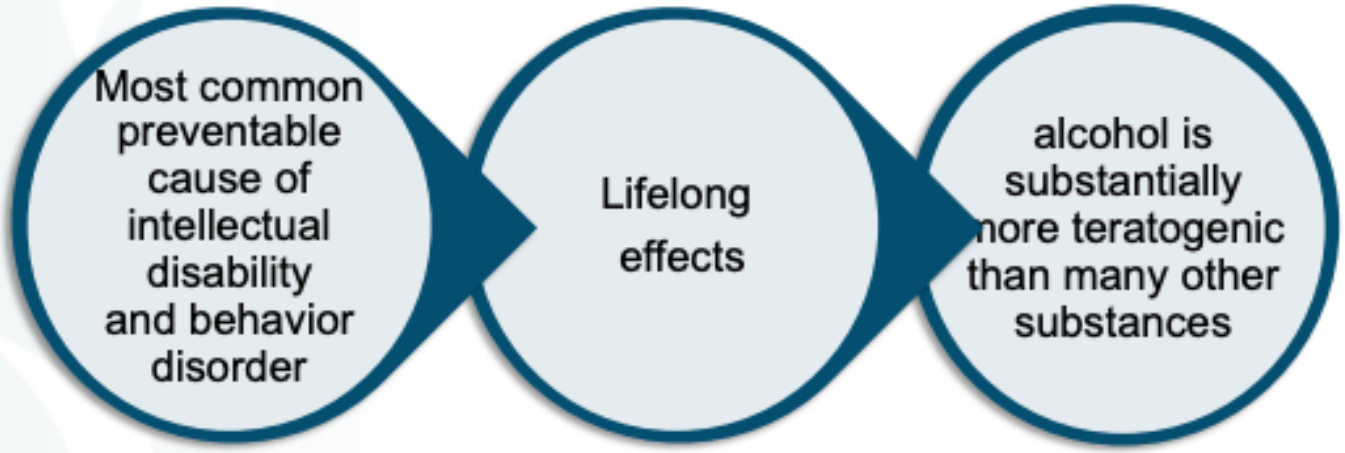
Prenatal Alcohol Exposure: Relevance to Practice



"Of all the substances […] including cocaine, heroin, and marijuana, alcohol produces by far the most serious neurobehavioral effects in the fetus."

- Institute of Medicine, 1996

Prenatal Alcohol Exposure Pathophysiology

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- Alcohol readily crosses the placenta and reaches the fetus
- The amniotic sac serves as a reservoir for alcohol prolonging exposure
- Maternal and fetal genetic polymorphisms in liver can cause differences in alcohol metabolism
- A dizygotic twin study showed different childhood outcomes in twins both exposed to alcohol in utero
- Currently no way to predict which fetuses are more vulnerable

Coyne et al. Pregnancy Characteristics of Women Giving Birth to Children with FAS. Obstet Gynecol 2008

Prenatal Alcohol Exposure and Adverse Outcomes

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Pregnancy

- Miscarriage
- Preterm Birth
- Placental Abruption
- Bleeding
- Chorioamnionitis
- Stillbirth

Neonatal

- Low birth weight
- Congenital Malformations
- Cognitive Deficits
- Behavioral Problems

Coyne et al. Pregnancy Characteristics of Women Giving Birth to Children with FAS. Obstet Gynecol 2008

Aliyu et al Alcohol Consumption in Pregnancy and risk of Placenta Previa and Abruption Mater Health J 2011

The role of maternal choline, folate and one-carbon metabolism in mediating the impact of prenatal alcohol exposure on placental and fetal development

Sarah E. Steane, James S. M. Cuffe and Karen M. Moritz

School of Biomedical Sciences, The University of Queensland, St Lucia, QLD, Australia

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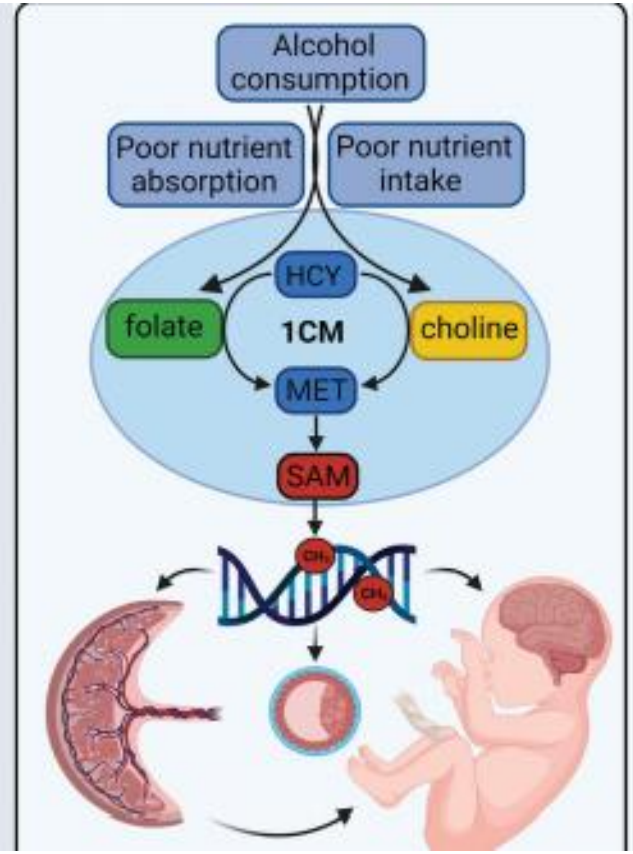

Risk reduction with prenatal choline supplementation?

Medication Treatment is Often Avoided Due to a Paucity of Data

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Behavioral Interventions

- Firstline for AUD though no clear superior intervention in pregnancy

Medications

- Currently NO published information on the efficacy of medications for AUD in pregnancy and limited information in the safety of medications

Medications for Treatment of AUD in Pregnancy

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Disulfiram

- Copper chelating agent causing similar outcomes to copper deficient diets
- High rate of birth defects in small human case series

NOT RECOMMENDED IN PREGNANCY

Acamprosate

- Animal studies are reassuring
- Very limited human data reassuring

REASONABLE OPTION FOR TREATMENT OF AUD IN PREGNANCY

Naltrexone

- Not studied for the treatment of AUD in pregnancy however small studies in OUD reassuring

REASONABLE OPTION FOR TREATMENT OF AUD IN PREGNANCY

Stimulants

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HARVARD MEDICAL SCHOOL

Risks of Illicit Stimulant Use In Pregnancy

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Maternal

- Hypertension
- Arrhythmias
- MI
- Renal Failure
- Hepatic Rupture
- Stroke
- Poor Nutrition
- Mood disorders

Pregnancy

- Placental Abruption
- Preterm birth
- Fetal growth restriction
- Stillbirth

Neonatal Risks

- Low birth weight
- Feeding/sleeping difficulties
- Withdrawal-like symptoms
- NICU admission

Prescribed Adderall has not been associated with increased maternal/fetal adverse events

Habersham L et al. Substance Use and Use Disorders During the Perinatal Period. American Journal of Obstetrics and Gynecology. 2024
Suarez, EA et al. Prescription Stimulant Use During Pregnancy and Risk of Neurodevelopmental Disorders in Children. JAMA Psych. 2018.

Treatment of Stimulant Use Disorder

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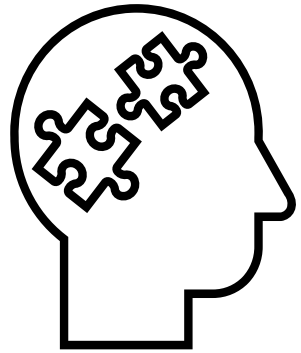
- Psychotherapy
  - Contingency management
  - Motivational interviewing
  - Cognitive behavioral therapy
- No FDA approved treatments for stimulant use disorder
- Withdrawal managed with supportive care alone



Miller SC, et al. ASAM. Principles of Addiction. 2018

Breastfeeding and Stimulants

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- Breastfeeding is discouraged with illicit stimulants
- Breastfeeding appears to be safe for prescribed stimulants at therapeutic doses
- Chronic stimulants can lead to hypoprolactinemia

Harris M et al. Academy of Breastfeeding Medicine Cliincal Protocol #21 Breastfeeding in the Setting of Substance Use Disorder revised 2023. Breastfeed Med 2023.

Benodiazapines

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Benzodiazepine Safety During First Trimester Organ Formation

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- Newer data suggests **no increased risk of cleft lip and plate**
- 1990-2010 database from the UK no difference in malformations in pregnancies exposed to:
  - Diazepam (Valium)
  - Temazepam (Restoril)
  - Zopiclone (Similar to US Lunesta)
- Less data on Clonazepam (Klonipin) and Lorazepam (Ativan)

Ban L, West J, Gibson JE, Fiaschi L, Sokal R, Doyle P, Hubbard R, Smeeth L, Tata LJ. First trimester exposure to anxiolytic and hypnotic drugs and the risks of major congenital anomalies: a United kingdom population-based cohort study. PLoS One. 2014 Jun 25;9(6):e100996.

Benzodiazepines As Delivery Approaches: Neonatal Abstinence Syndrome

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- Benzodiazapines have been associated with increased risks of Neonatal Abstinence Syndrome (NAS)
- 5x increased risk of needing pharmacologic treatment when combined with opioids
- Characteristics:
  - Transient disturbances in autonomic, GI, nervous systems
  - Poor feeding, irritability and seizure activity shortly after birth
- Treatment:
  - Supportive care such as Eat Sleep Console (ESC) Method (shorter length of hospital stay and withdrawal onset/severity compared to usual care) in fetuses exposed to opioids
  - Pharmacotherapy

San Lorennzo LA, et al. Increased Severity of Neonatal Abstinence Syndrome Associated with Concomittent Antenatal Opioid and Benzodiazpaine Exposure. Hospital Pediatrics, 2019.

Benzodiazepines in Pregnancy: Longest to Shortest Acting

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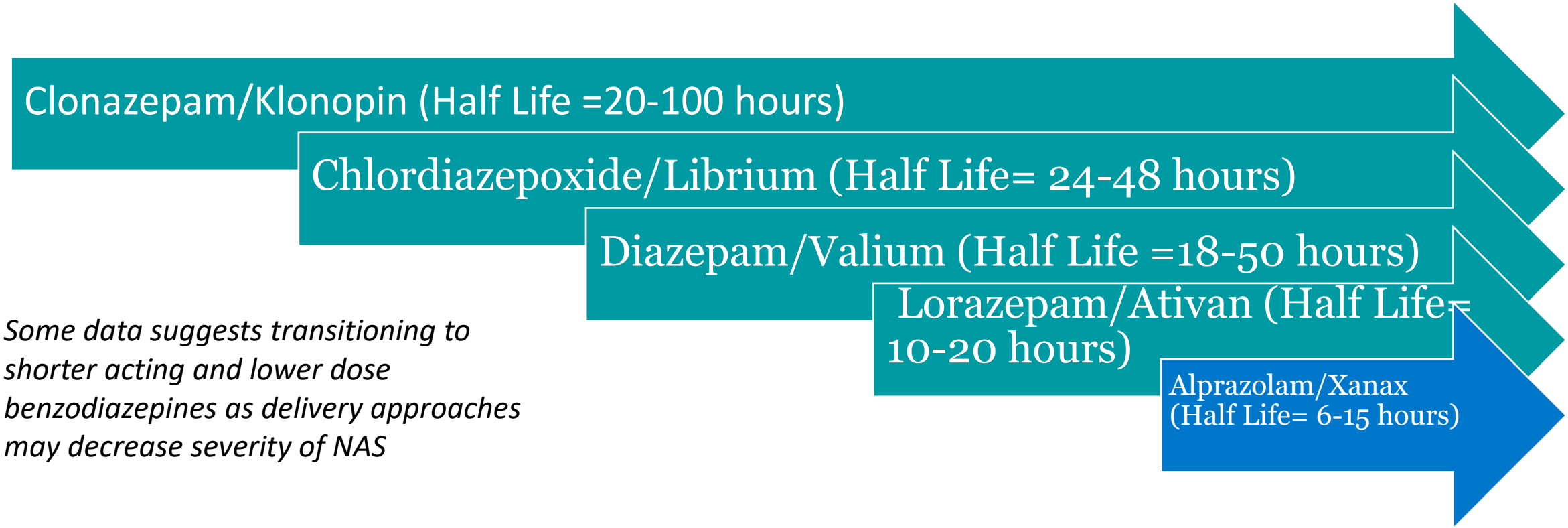

Some data suggests transitioning to shorter acting and lower dose benzodiazepines as delivery approaches may decrease severity of NAS

Iqbal,M et al. Effects of the Commonly Used Benzodiazapines on the Fetus, the Neonate and the Nursing Infant

Cannabis

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Cannabis Use is Common in Pregnancy

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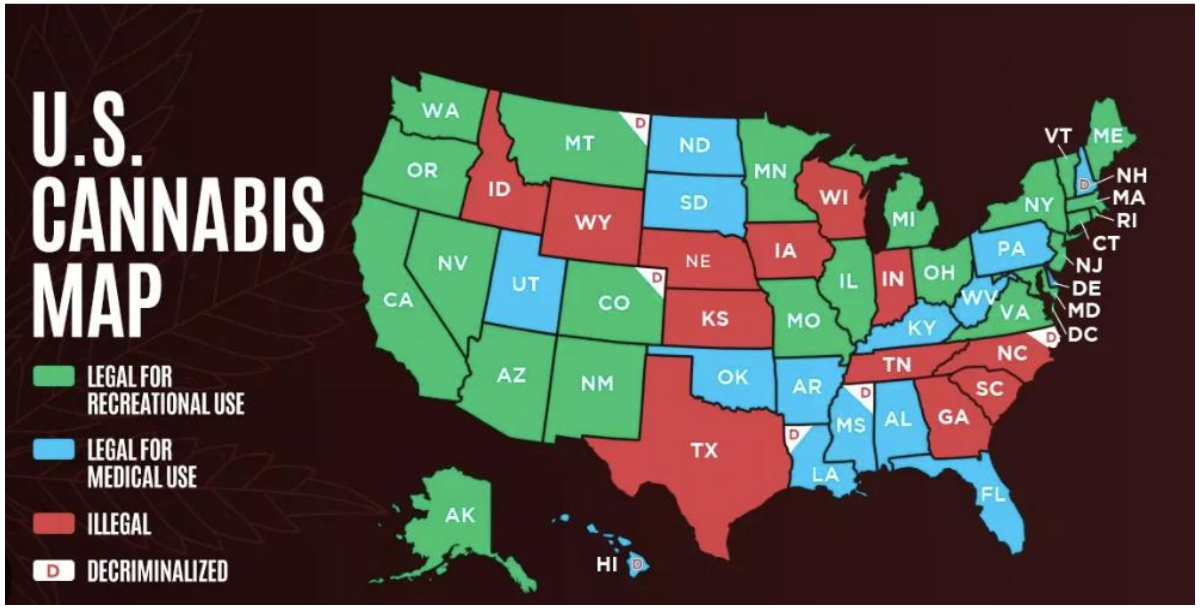
- Prevalence: 9.8% in pregnancy and 3.2 % postpartum[1]
- THC and other cannabinoids cross the placenta
- Associated with placental dysfunction particularly with ongoing use after the first trimester [2]
- Associated with increased risks of:
  - Anemia
  - Hypertensive Disorders
  - Low Birth Weight
  - NICU admission



1. Brown et al. Cannabis Use, Cannabis Use Disorder and Mental Health Disorders Amonngst Pregnant and Postpartum Women in the US. Drug and Alcohol Depen 2023.
2. Metz et al. Cannibis Exposure and Adverse Pregnancy Outcomes Related to Placental Function. JAMA 2023.

Cannabis Use in Pregnancy: Fetal Neurodevelopment and Immune Sys

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- Endocannabinoid system plays a critical role in fetal neurodevelopment
- There are concerns about long-term impacts on children including mood/anxiety, attention deficits, poor cognitive outcomes
- Cannabis use can affect placental gene expression associated with the immune system and neurobehavioral effects

Bara et ak, Cannabis and Synpatic reprogramming of the DEveloping Brain. NAt Rev Neurosci. 2021
Rompala G et al. Maternal Cannabis Use is asscociated with supression of immune gene networks in the placenta. Proc Natl Acad Sci USA 2021.

Cannabis Use Disorder Treatment in Pregnancy

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- No FDA approved treatments for CUD
- Behavioral interventions
- Psychosocial support
- Motivational Interviewing

Cannabis Use and Breastfeeding

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- Cannabis is lipophilic and secreted in breastmilk with a relative infant dose of up to 8.7%
- After use Cannabis can take up to 6 weeks to clear from breastmilk
- Can decrease immunoglobulin transfer to the infant
- Potential for neurobehavioral effects
- **Abstinence is recommended**

Harris M, et al. Academy of Breastfeeding Medicine clincial protocol #21 breastfeeding in the setting of substance use and substance use disorder. 2023

Perinatal Toxicology Testing

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Screening for Substance Use

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The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ASAM American Society of Addiction Medicine

ACOG COMMITTEE OPINION

Number 711 • August 2017 *(Replaces Committee Opinion Number 524, May 2012)*

Committee on Obstetric Practice
American Society of Addiction Medicine

The Society of Maternal–Fetal Medicine endorses this document. This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Obstetric Practice in collaboration with committee members Maria A. Mascola, MD, MPH; Ann E. Borders, MD, MSc, MPH; and the American Society of Addiction Medicine member Mishka Terplan, MD, MPH.

All pregnant persons should be **screened** for substance use, followed by brief intervention, and referral for treatment

Screening should be done at first OB visit and should be **universal**

Screening should involve use of a **standardized questionnaire**

Box 2. Clinical Screening Tools for Prenatal Substance Use and Abuse

4 Ps*

Parents: Did any of your parents have a problem with alcohol or other drug use?

Partner: Does your partner have a problem with alcohol or drug use?

Past: In the past, have you had difficulties in your life because of alcohol or other drugs, including prescription medications?

Present: In the past month have you drunk any alcohol or used other drugs?

Scoring: Any "yes" should trigger further questions.

NIDA Quick Screen†

Screen Your Patients

Step 1. Ask patient about past year drug use—the NIDA Quick Screen

Step 2. Begin the NIDA-Modified ASSIST

Step 3. Determine risk level

Conduct a Brief Intervention

Step 4. Advise, Assess, Assist and Arrange

CRAFFT—Substance Abuse Screen for Adolescents and Young Adults‡

C Have you ever ridden in a CAR driven by someone (including yourself) who was high or had been using alcohol or drugs?

R Do you ever use alcohol or drugs to RELAX, feel better about yourself, or fit in?

A Do you ever use alcohol or drugs while you are by yourself or ALONE?

F Do you ever FORGET things you did while using alcohol or drugs?

F Do your FAMILY or friends ever tell you that you should cut down on your drinking or drug use?

T Have you ever gotten in TROUBLE while you were using alcohol or drugs?

Scoring: Two or more positive items indicate the need for further assessment.

Slide Courtesy of Molly Siegel MD

Complexities in Toxicology Testing: Bias

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Research Letter

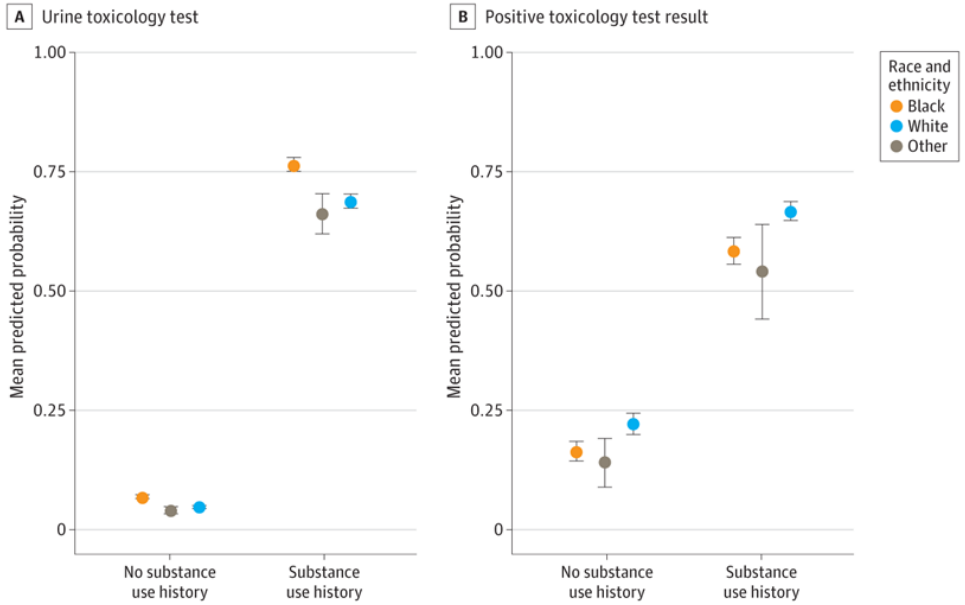
April 14, 2023

Association of Race With Urine Toxicology Testing Among Pregnant Patients During Labor and Delivery

Marian Jarlenski, PhD, MPH[1]; Jay Shroff, MS[1]; Mishka Terplan, MD[2]; et al

37,860 patients

Black patients had higher probability of receiving a toxicology test at time of delivery but not more likely to have a positive result



Complexities of Toxicology Testing: False Positives

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Original Research ajog.org

OBSTETRICS

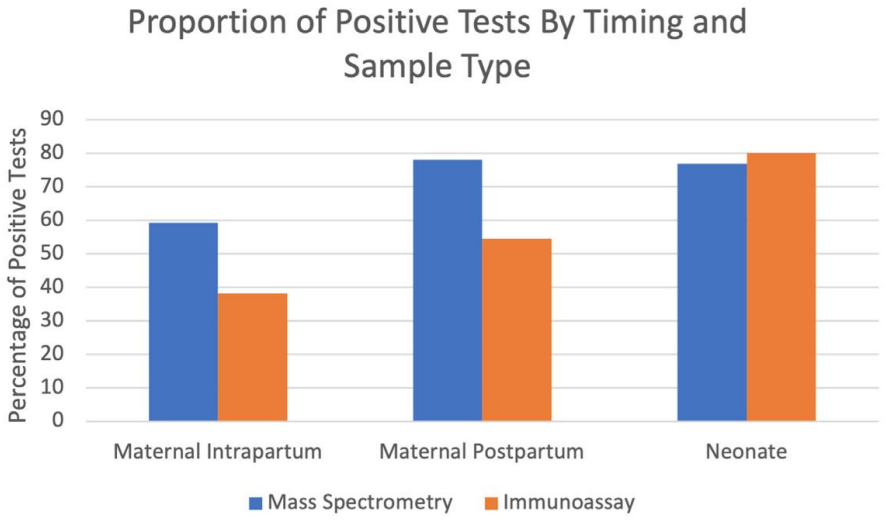
Fentanyl in the labor epidural impacts the results of intrapartum and postpartum maternal and neonatal toxicology tests

Molly R. Siegel, MD; Grace K. Mahowald, MD, PhD; Sacha N. Uljon, MD, PhD; Kaitlyn James, PhD; Lisa Leffert, MD; Mackenzie W. Sullivan, MD; Susan J. Hernandez, CNM; Jessica R. Gray, MD; Davida M. Schiff, MD; Sarah N. Bernstein, MD

Overall:

- 76.7% had a positive maternal LC-MS/MS and 40% immunoassay intrapartum
- 90.5% had a positive maternal LC-MS/MS and 61.9% immunoassay postpartum
- 76.9% of neonates had a positive test after delivery

FIGURE 2
Proportion of positive tests by timing and sample type



Siegel. The INFORMU Trial. Am J Obstet Gynecol 2022.

Complexities of Toxicology Testing: Clinical Utility

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Original Research

Assessing the clinical utility of toxicology testing in the peripartum period

Check for updates

Molly R. Siegel, MD; Samuel J. Cohen, MD; Kathleen Koenigs, MD; Gregory T. Woods, MD; Leah N. Schwartz, BA; Leela Sarathy, MD; Joseph H. Chou, MD, PhD; Mishka Terplan, MD, MPH; Timothy Wilens, MD; Jeffrey L. Ecker, MD; Sarah N. Bernstein, MD; Davida M. Schiff, MD

- Missed opportunities for maternal intervention
  - 38.8% referred to substance use treatment
  - 35.9% of those with a positive opioid test were initiated on MOUD
  - 32.5% with an OB postpartum visit
  - 38.7% with a postpartum mental health visit
- Poor postpartum outcomes
  - 18.8% readmitted in the year after delivery
  - 7.5% with a postpartum overdose
  - 4 documented deaths after the first postpartum year; 3 due to overdose and 1 unknown cause

Complexities of Toxicology Testing: Informed Consent

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OBSTETRICS & GYNECOLOGY

Original Research

Informed consent is poorly documented when obtaining toxicology testing at delivery in a Massachusetts cohort

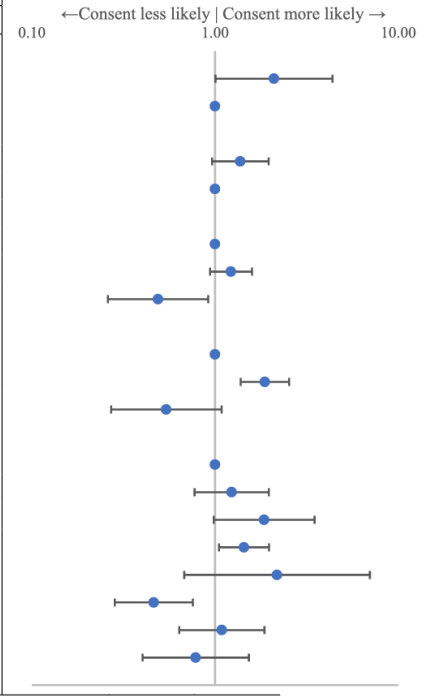
Check for updates

Kathleen J. Koenigs, MD; Joseph H. Chou, MD, PhD; Samuel Cohen, MD; Moira Nolan, BA; Gina Liu, MSc; Mishka Terplan, MD, MPH; Brian M. Cummings, MD; Timothy Nielsen, MPH; Nicole A. Smith, MD, MPH; Joseph Distefano, BS; Sarah N. Bernstein, MD; Davida M. Schiff, MD, MSc

- 1562 deliveries with maternal toxicology testing
- Verbal consent documented in 466 (29.8%)

FIGURE 2
Association of maternal and hospital characteristics with documented consent

Characteristics	Crude Odds Ratios*			Adjusted Odds Ratios**		
	OR	95% CI		OR	95% CI	
Hospital consent policy						
Yes	2.29	1.40	3.74	**2.10**	**1.01**	**4.37**
No	1.00	reference		1.00	reference	
Preterm delivery						
No	2.40	1.79	3.21	1.37	0.96	1.96
Yes	1.00	reference		1.00	reference	
Insurance type						
Private pay/commercial	1.00	reference		1.00	reference	
Medicaid	1.42	1.11	1.81	1.22	0.94	1.59
Medicare	**0.59**	**0.32**	**1.08**	**0.49**	**0.26**	**0.92**
Prenatal care location						
Hospital or private practice	1.00	reference		1.00	reference	
Community health center	**2.00**	**1.51**	**2.65**	**1.87**	**1.38**	**2.53**
Other	0.58	0.32	1.05	0.54	0.27	1.09
Primary testing indication						
Recent non-prescribed use	1.00	reference		1.00	reference	
Opioid agonist therapy	1.37	0.87	2.16	1.23	0.77	1.97
Remote non-prescribed use	2.06	1.11	3.83	1.85	0.98	3.49
Cannabis use	**1.60**	**1.18**	**2.17**	**1.44**	**1.05**	**1.97**
Monitoring medicine	1.75	0.58	5.25	2.18	0.68	7.00
Maternal complication	**0.41**	**0.27**	**0.63**	**0.46**	**0.28**	**0.76**
Inadequate prenatal care	1.33	0.82	2.18	1.09	0.64	1.86
Other/unknown	0.97	0.52	1.83	0.78	0.40	1.53



Highlights of the Mass General Brigham Approach to Toxicology Testing

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- Toxicology testing **should only be utilized as part of a clear treatment plan where the findings will change clinical management**

- Written informed consent must be obtained

- Infant urine toxicology testing can occur with written parental consent and should only be obtained if there is a clinical indication that would change clinical management

Summary

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- ✓ Pregnant patients with substances use disorders face **great stigma and unique challenges** in getting care
- ✓ **Agonist treatment** with methadone and buprenorphine are the mainstays of OUD treatment in pregnancy
- ✓ Benzodiazepines, Alcohol, Cannabis and Illicit Stimulants are all associated with adverse neonatal outcomes and there is minimal data to guide management
- ✓ Universal toxicology screening is recommended in pregnancy however **toxicology testing should only be utilized when the testing will change clinical management**

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Thank you!

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