

Pregnancy and Newborns: Considerations from Science to Systems

Leslie Hayes, MD Family Physician and Addiction Medicine El Centro Family Health Espanola, NM





Financial Disclosure

Leslie Hayes, MD

• No relevant disclosures



Describe effect of substance use disorder on pregnancy and evidence-based treatment strategies for pregnant patients and newborns.





Pregnancy and Substance Use Disorder



Definition of terms for providers not regularly doing obstetric care

- G = Gravida = total number of pregnancies
- P = Para = total number of deliveries
- XX weeks = weeks since last menstrual period or weeks since conception + 2
- Full-term = 37-41 weeks gestation
- IUGR = Intrauterine growth restriction = fetal weight by ultrasound < 10th percentile
- SGA = small for gestational age = weight of newborn baby < 10th percentile for gestational age



Definition of terms for providers not regularly doing obstetric care

- Preterm labor = labor at < 37 weeks
- Preterm delivery = delivery at < 37 weeks
- Placental abruption = placenta pulls away from the wall of the uterus. Small abruptions can cause IUGR or preterm labor.
 Large abruptions can be fatal for mother and baby.





Case Study

33 yo G4P3 had been stable on buprenorphinenaloxone for 4 years. Presented to her buprenorphine provider for routine appointment and was discovered to be pregnant. Her buprenorphine provider did not give her a script because of this. She relapsed to heroin. She presented to our clinic at 25 weeks gestation, but because of transportation difficulties, she was unable to get restarted on buprenorphine and delivered a premature infant at 31 weeks. She restarted buprenorphine postpartum, and both she and baby did well.



Case Study

22yo G1PO presents @ 9 weeks gestation. Actively using heroin. Desperately wanted to keep this pregnancy and this child. Started on buprenorphine maintenance, did well. Child with no signs of Neonatal Opioid Withdrawal Syndrome at birth. Currently 10 years old, doing well.

Substance use in pregnancy

- Use of alcohol, tobacco, and drugs during pregnancy is the leading preventable cause of mental, physical, and psychological impairments in children.
- Between 1998-2011, there was a 127% increase in opioid-dependent pregnant women presenting for delivery. ¹
- Opioid-dependent pregnant women have an unintended pregnancy rate of 86%.²
- Please provide or refer for contraception if you are treating persons who can get pregnant.

¹McCarthy et al. Opioid dependence and pregnancy: minimizing the stress on the fetal brain. American Journal of Obstetrics and Gynecology. 3 December 2016. pp 1-6

Perinatal SBIRT: 4 Ps Plus

Parents Did either of your parents ever have a problem

with alcohol or drugs?

Partner Does your partner have a problem with alcohol

or drugs?

Past Have you ever had a problem with alcohol or

drugs in the past?

Past 30 days In the past month, have you drunk any alcohol

or used any substances?

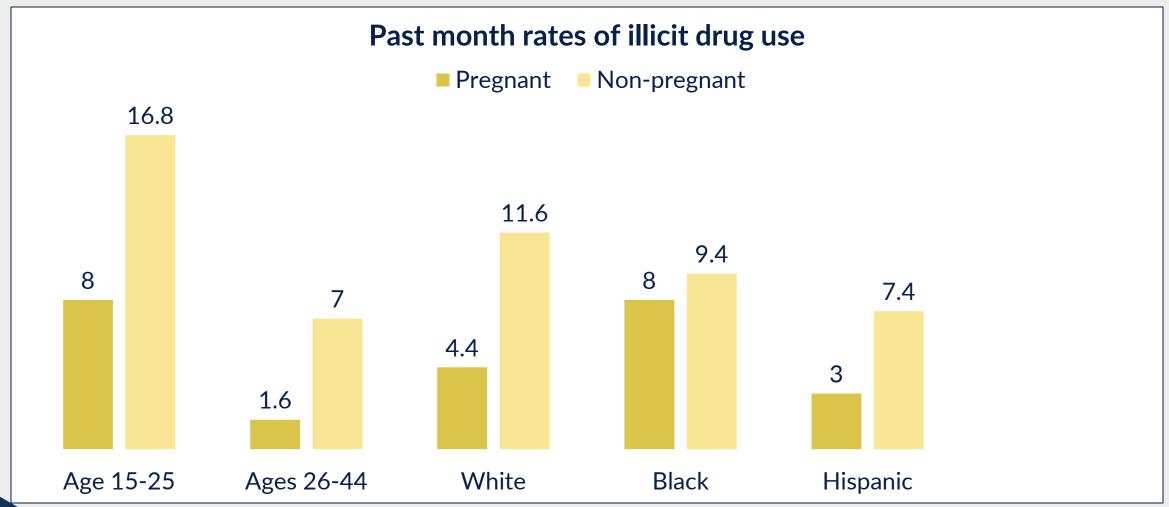


 What are medical implications of substance use disorder with pregnancy?

• What is the significance of pregnancy for any substance use disorder?

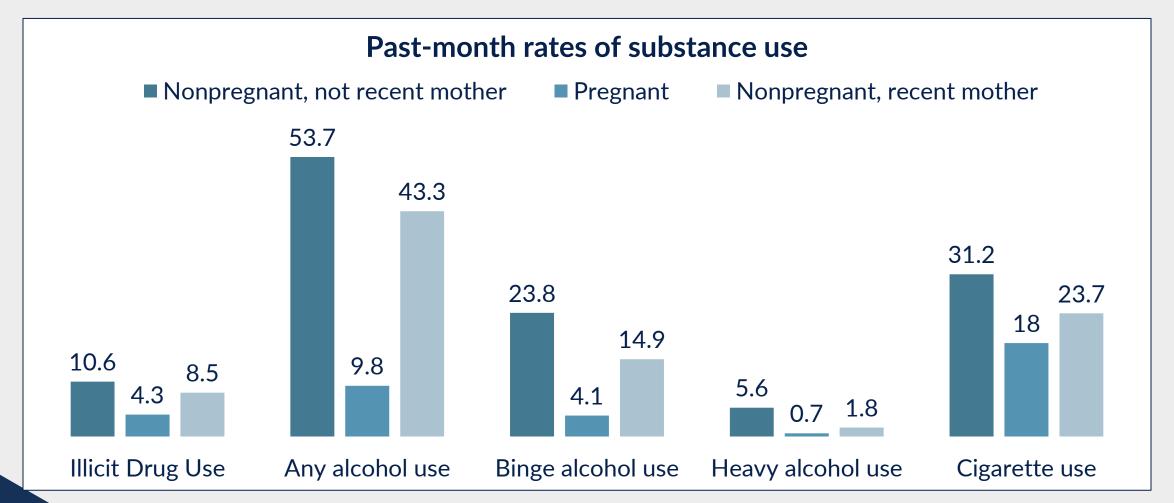


Percentages of past-month illicit drug use in pregnant and non-pregnant women





Percentages among women aged 15-44 years who reported past-month substance use by pregnancy and recent motherhood status





Birth defects with substances

• The drug with the most teratogenic potential is alcohol. ¹

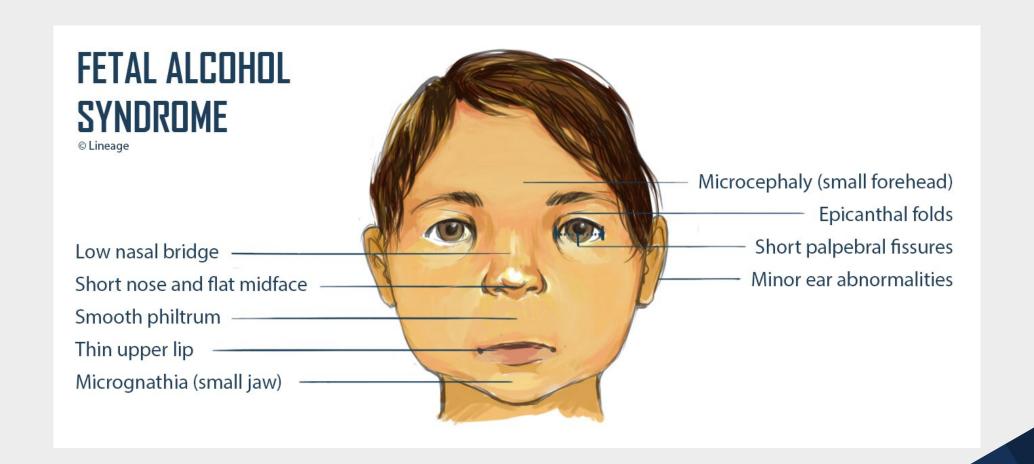


Fetal alcohol syndrome

- Evidence of growth restriction (prenatal and/or postnatal)
 - Height and/or weight <= 10th percentile
- Evidence of deficient brain growth and/or abnormal morphogenesis
 - Structural brain anomalies or head circumference <=10th percentile
- Characteristic pattern of minor facial anomalies
 - Short palpebral fissures, thin vermillion border upper lip, smooth philtrum



Fetal alcohol syndrome





Tobacco and pregnancy

- Neonates born to mothers who smoke weigh an average of 200 gm less than neonates born to mothers who don't smoke. ¹
- 22% of SUIDs (Sudden Unexpected infant deaths) can be directly attributed to maternal smoking during pregnancy. ²



Cannabis and pregnancy



- Many potential confounders:
 - Concurrent use of alcohol/tobacco
 - Income/age/education
 - Co-occurring psychiatric conditions
- Cannabis use is common the prevalence of self-reported marijuana use is 2-5%, and it increased from 2.37% in 2002 to 3.85% in the 2014 NSDUH.¹



Cannabis and pregnancy

- Most common reasons to use cannabis in pregnancy are morning sickness and to manage anxiety/depression
 - Use of cannabis for morning sickness can lead to cannabinoid hyperemesis syndrome.¹





Cannabis and pregnancy

- Data is mixed on effect of cannabis on pregnancy. ¹
 - Studies have given varied results on effect on birthweight ^{2,3}, birth defects ⁴, and other outcomes.
 - There does seem to be a pattern of neurobehavioral effects on the fetus, with hyperactivity and sleep problems in toddlers, ADHD in pre-teens, and emotional dysregulation in adolescents. 5-7

¹ Sheryl A. Ryan, Seth D. Ammerman, Mary E. O'Connor, COMMITTEE ON SUBSTANCE USE AND PREVENTION, SECTION ON BREASTFEEDING, Lucien Gonzalez, Stephen W. Patrick, Joanna Quigley, Leslie R. Walker, Joan Younger Meek, IBCLC, Margreete Johnston, Lisa Stellwagen, Jennifer Thomas, Julie Ware; Marijuana Use During Pregnancy and Breastfeeding: Implications for Neonatal and Childhood Outcomes. Pediatrics September 2018; 142 (3): e20181889. 10.1542/peds.2018-1889

² Badowski S, Smith G. Cannabis use during pregnancy and postpartum. Can Fam Physician. 2020;66(2):98-103.

³ Gunn JK et al. Prenatal exposure to cannabis and maternal and child health outcomes: a systematic review and meta-analysis. BMJ Open. 2016 Apr 5;6(4):e009986. doi: 10.1136/bmjopen-2015-009986.

⁴Conner et al. Maternal Marijuana Use and Adverse Neonatal Outcomes: A Systematic Review and Meta-analysis. Obstet Gynecol. 2016 Oct;128(4):713-23. doi: 10.1097/AOG.000000000001649.

⁵ Weaver et al. Alcohol and Other Drug Use During Pregnancy: Management of the Mother and Child in Miller et al. The ASAM Principles of Addiction Medicine. Wolters Kluwer 2019P 1325

⁶Thompson R, DeJong K, Lo J. Marijuana Use in Pregnancy: A Review. Obstet Gynecol Surv. 2019 Jul;74(7):415-428

⁷Nashed et al. Cannabinoid Exposure: Emerging Evidence of Physiological and Neuropsychiatric Abnormalities Frontiers in Psychiatry. 11/2021

⁸Roncero et al. Cannabis use during pregnancy and its relationship with fetal developmental outcomes and psychiatric disorders. A systematic review. Reprod Health. 2020;17(1):25. 2020 Feb 17.



Cannabis and pregnancy –what we need to tell our patients

- Pregnant complain about hearing mixed messages from healthcare providers.
 They also state that want more research on the safety and effects of cannabis with pregnancy.¹
- There is no recognized "safe" amount of marijuana with pregnancy.
 - Although marijuana hasn't been found definitively to be dangerous, it has also most definitely not been found to be safe.
 - It is also likely much more dangerous if combined with tobacco and alcohol.
- There is very likely a risk of long-term neurocognitive effects.
- While it may help with morning sickness, it can lead to cannabinoid
 hyperemesis syndrome, which is way worse, and there are better treatments.



Stimulant use and pregnancy

- Methamphetamine ¹ and cocaine ² use are associated with the following:
 - Preterm delivery
 - Low birth weight
 - Small for gestational age infants





Implications of opioid use disorder with pregnancy

- Medication: Both use and withdrawal have fetal effects. Withdrawal effects usually considered more serious.
 - Withdrawal causes a hyperadrenergic state which causes constriction of blood vessels in placenta. Exacerbated by cocaine and methamphetamine use. Can cause preterm labor and placental abruption.
 - Biggest direct effect of opioid use is Neonatal Opioid Withdrawal Syndrome at birth.





Case Study Pregnancy and Substance Use Disorder

28 yo G5P4, on methadone maintenance, disappeared from care at about 20 weeks, returned at 38 weeks in labor. Stated she had been at a methadone clinic in another community, but urine was negative for methadone, + for opiates. Baby went into horrible withdrawal at birth, child protective services involved and took child. Mother was arrested when she and her cousin, who was foster mother, got in fight on OB floor.

• What are psychosocial implications of substance use disorder with pregnancy?



Implications of substance use disorder with pregnancy

- Co-occurring disorders
 - Depression.
 - Both substance use disorder and depression cause poor self-care.
 - Domestic violence
 - Second-leading cause of trauma-related death in pregnancy.



Implications of substance use disorder with pregnancy

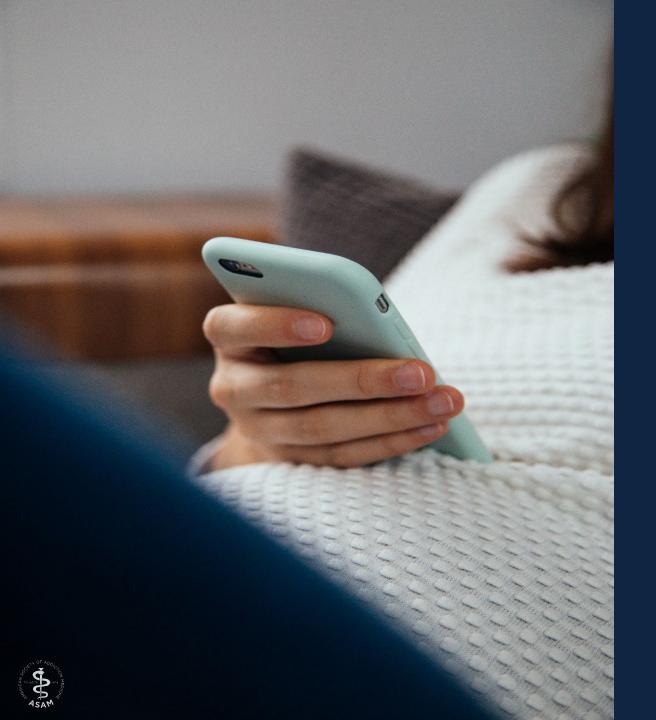
- Psychosocial:
 - Most mothers have a high motivation to change.
 - Lot of guilt/shame for many women
 - Legal implications around custody of baby and older children
 - Most substance-using pregnant women have very poor self-care behaviors. If they continue to use drugs, they are unlikely to take good care of themselves during the pregnancy.



Implications of substance use disorder with pregnancy

- Psychosocial:
 - Often have history of childhood sexual abuse or physical abuse (with implications for parenting)
 - High incidence of PTSD
 - Most women who use drugs start using because their partners use drugs. If they are still with that partner, it can be difficult for them to quit unless he quits as well.





Medical Conditions Case Study Pregnancy and Opioid Dependence

25 yo G2P1 presents at 26 weeks, stating, "I'm addicted to fentanyl." Scared that she will lose baby to child protective services or have medical complications. She wants to get into treatment.

- Is medication therapy an option for her?
- Which is better, buprenorphine or methadone?
- What about weaning off the fentanyl and using abstinencebased therapy?
- Does she need any special care for her pregnancy?



Prenatal Care

- In a study in the Journal of Perinatology, it was found that pregnant people with illicit drug use and no prenatal care had the highest risk for prematurity, low-birth weight and small for gestational age infants. As prenatal care increased, risk for prematurity, low birth weight and small for gestational age babies dropped. ¹
- Pregnant people will often delay or not get prenatal care because of stigma and fear of consequences, including being reported to child protective services.²



¹El-Mohandes et al. Prenatal Care reduces the Impact of Illicit Drug use on Perinatal Outcomes. Journal of Perinatology. 2003; 23:354-360

 Abstinence-based therapy is not recommended during pregnancy for anyone who is actively using opioids.1



Medication therapy and pregnancy

 Medication therapy for opioid use disorder (MOUD) is standard of care for pregnancy



MOUD and pregnancy

- MOUD can be done with either methadone or buprenorphine.
 - Methadone has been used longer, but most providers prefer to start with buprenorphine if available.
- Two recent small studies of naltrexone showed no adverse fetal effects when it was started during pregnancy with substantially less neonatal opioid withdrawal syndrome. ^{1,2}
 - More study is needed



^{1.} Kelty E, Hulse G. A Retrospective Cohort Study of Birth Outcomes in Neonates Exposed to Naltrexone in Utero: A Comparison with Methadone-, Buprenorphine- and Non-opioid-Exposed Neonates. Drugs. 2017 Jul;77(11):1211-1219. doi: 10.1007/s40265-017-0763-8. PMID: 28536981.

^{2.} Towers CV, Katz E, Weitz B, Visconti K. Use of naltrexone in treating opioid use disorder in pregnancy. Am J Obstet Gynecol. 2020 Jan;222(1):83.e1-83.e8. doi: 10.1016/j.ajog.2019.07.037. Epub 2019 Jul 31. Erratum in: Am J Obstet Gynecol. 2023 Mar 14:: PMID: 31376396.

Access to MOUD while pregnant

- A 2020 study of obstetricians showed that only a third of obstetricians always recommend MOUD and a fourth never recommend it.¹
- MOUD providers are far less likely to accept pregnant patients than non-pregnant patients.²
 - Methadone 97% vs 91%
 - Buprenorphine 83% vs 51%



Benefits of MOUD during pregnancy

- A recent study of 10,741 pregnant persons with OUD on Medicaid with 13,320 pregnancies showed the following benefits to Medication for Opioid Use Disorder:
 - Decreased rate of overdose
 - Decreased preterm birth
 - Decreased low birthweight
- All of the above outcomes improved with longer duration of MOUD during the pregnancy
- Of note, 41.8% of patients did not have any pharmacy fill for MOUD during the pregnancy



Buprenorphine vs methadone in Pregnancy

- 2010 NEJM study showed significantly less Neonatal Opioid Withdrawal Syndrome in buprenorphine group than the methadone group¹
 - Babies exposed to buprenorphine required 89% less morphine, had a 43% shorter hospital stay, and shorter duration of treatment than babies exposed to methadone ¹



Starting buprenorphine in a pregnant person

- Very little data or consensus recommendation
- Most clinicians are doing micro-dosing as an outpatient or rapid micro-dosing in an inpatient setting
- Macrodosing may be considered if the patient presents in active withdrawal



Morning sickness and methadone

- Both ondansetron and methadone cause QT prolongation, so use other treatments first.
- Lifestyle changes:
 - Small frequent meals
 - Avoid fluids with meals
 - Eat something before getting out of bed
 - Popsicles
- Ginger
- Pyridoxine, 10 mg + Doxylamine, 10mg tid



What about medically monitored withdrawal?



Medically monitored withdrawal

- Recent meta-analysis reviewed 15 studies with 1,997 participants, of whom 1,126 went detoxification
 - Study quality was fair to poor with no randomized control trials
 - Mostly inpatient or residential setting with 3 incarceration studies
- Detoxification completion ranged from 9-100%.
- Relapse ranged from 0-100%
- 2 maternal deaths from postpartum overdose in one study



Medically monitored withdrawal

- Rates of fetal demise and birthweights were similar between women who underwent detoxification and comparison group
- Rates of neonatal abstinence syndrome ranged from 0-100%



Medically Monitored withdrawal

 No study of medically monitored withdrawal has examined maternal outcomes postpartum¹



- The previous patient has made it to term and is about to go into labor.
- Do you need to do anything special to manage her labor?
- What can you expect for the baby?
- Can she breast-feed?
- What can she expect post-partum?



Labor and delivery

- Method of delivery should be based solely on obstetric considerations.
- Epidural is preferred method of pain relief.



Post-partum mothers and substance use disorder

- High risk for relapse. Encourage them to continue with recovery behaviors and MOUD.
- Often, do not have good parenting skills. Consider home nursing, parenting classes.
- May have a fussier baby than average need a lot of support.





Comorbid Medical Conditions Case Study: Pregnancy and Opioid Dependence

34 yo G2P1 had been on buprenorphine-naloxone for heroin use disorder. She moved away and got pregnant and weaned herself off the buprenorphine. Moved back and declined to restart buprenorphine because "I am not going to ever go back to drugs." NSVD of healthy baby with negative urine drug screens throughout pregnancy. Died of an overdose about 1 year post-partum.

Maternal mortality and opioid use disorder

• Studies from Maryland, Tennessee, Colorado, Utah, Ohio, and Massachusetts have found that postpartum overdose is one of the top causes of maternal mortality, causing 15-33% of deaths.

1 https://phpa.health.maryland.gov/mch/Documents/Health-General%20Article,%20%C2%A713-

1207,%20Annotated%20Code%20of%20Maryland%20-

<u>%202019%20Annual%20Report%20%E2%80%93%20Maryland%20Maternal%20Mortality%20Review.pdf</u> Accessed 2/18/2021

2 Tennessee Maternal Mortality Review of 2Maryland Maternal Mortality Review. 2014 Annual Report. MD Dept of Health and Mental Hygiene. Prevention and Health Promotion Administration.

3 Metz et al. Maternal Deaths from Suicide and Overdose in Colorado, 2004-2012. Ob Gyn. Vol 128. No. 6. December 2016. pp 1233-1240

4 Smid et al. Pregnancy-Associated Death in Utah: Contribution of Drug-Induced Deaths. Obstet Gynecol. 2019 Jun; 133(6): 1131-1140

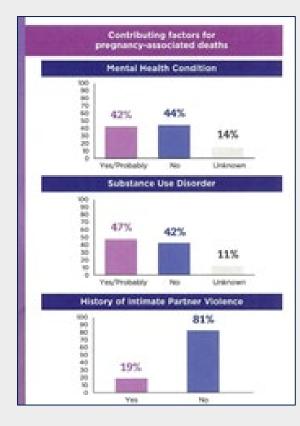
5 Hall et al. Pregnancy-Associated Mortality Due to Accidental Drug Overdose and Suicide in Ohio, 2009-2018. Obstetrics and Gynecology. Vol 136, No 4 October 2020

ASAM

Maternal mortality and substance use disorder

New Mexico found that 47 % of maternal deaths were

connected to substance use.





Maternal mortality and opioid use disorder

- Suicide is also a substantial contributor to postpartum mortality. ¹
- Risk factors for postpartum opioid overdose and postpartum suicide have significant overlap.²
- Three of the most common include depression, intimate partner violence, and substance use disorder.
- Screen for depression postpartum. Use Edinburgh Postpartum Depression Screen or another tool.



Increased maternal mortality continued for many years after delivery in 2019 study

Mothers in Ontario and England with babies who had neonatal abstinence syndrome have a mortality rate that is over ten times as high as mothers who did not have an affected baby.

Roughly 1 in 20 mothers died over the next decade.

Top cause of death was unintentional injuries, but there were also high rates of murder and suicide, drug-related deaths, and unavoidable deaths.



Neonatal Opioid Withdrawal Syndrome



Neonatal Opioid Withdrawal Syndrome definition

- Neonatal Opioid Withdrawal Syndrome = physical withdrawal.
- Neonatal Opioid Withdrawal Syndrome baby is ≠ addicted to drugs.



Clinical definition of opioid withdrawal in the neonate from the AAP

- Presence of clinical elements 1 and 2
- (1)In utero exposure to opioids with or without other psychotropic substances (recommended to be collected via confidential maternal self-report; toxicology testing also acceptable with maternal informed consent)

- (2)Clinical signs characteristic of substance withdrawal; any 2 of the following 5 signs qualify:
 - Excessive crying (easily irritable)
 - Fragmented sleep (<2-3 h after feeding)
 - Tremors (disturbed or undisturbed)
 - Increased muscle tone (stiff muscles)
 - Gastrointestinal dysfunction (hyperphagia, poor feeding, feeding intolerance, loose or watery stools)



Non-pharmacologic treatment of Neonatal Opioid Withdrawal Syndrome

- Non-pharmacologic treatment includes the following:
 - Small, frequent feeds.
 - Quiet, dim light.
 - Swaddling or skin-to-skin.
 - Prenatal education for parents.
- Studies from Dartmouth ¹ and Yale ² showed substantial improvements in cost and length of stay using non-pharmacologic treatment.



Breastfeeding

- The Academy of Breastfeeding Medicine, the American Academy of Pediatrics, the American College of OB-GYN, the Substance Abuse and Mental Health Services Administration, and the American Society for Addiction Medicine recommend breastfeeding for women with substance use disorder who are in a treatment program and have had negative drug screens for 2 months prior to delivery. 1-5
 - This includes women on MOUD.

¹Jansson, L. et al, Methadone Maintenance and Breastfeeding in the Neonatal Period PEDIATRICS Vol. 121 No. 1 January 2008, pp. 106-114

²Reece-Stretman et al. ABM Clinical Protocol #21: Guidelines for Breastfeeding and Substance use or Substance Use Disorder, Revised 2015 Breastfeeding Medicine; Vol 10, November 3, 2015, pp 135-141

³Substance Use, Misuse, and Use Disorders During and Following Pregnancy, with an Emphasis on Opioids. ASAM Policy Statement. January 18, 2017

⁴Clinical Guidance for Treating Pregnant and Parenting Women with Opioid Use Disorder and Their Infants. SAMHSA.

HHS Publication No. (SMA) 18-5054



Child protective services and mental health

Study in Manitoba showed that losing custody of a child-to-child protective services is associated with significantly worse maternal mental health outcomes than experiencing the death of a child

Risk of depression was 1.90 times greater for women who had lost a child to child protective services.

Risk of substance use was 8.54 times greater for women who had lost a child to child protective services.

To Call Child Protective Services or not

- Know your state's laws
 - Child Welfare Information Gateway has a page that will let you look up your state's laws:
 - https://www.childwelfare.gov/topics/systemwide/laws-policies/state/
 - Guttmacher Institute also has information on state laws.
 https://www.guttmacher.org/state-policy/explore/substance-use-during-pregnancy
- Know your local hospitals' policies.



To Call Child Protective Services or not

- Discuss child protective service involvement during pregnancy
 - What will trigger a referral
 - What will likely happen with a referral
- Discuss with your patient what to do if a referral is made:
 - Be honest with child protective services
 - Have a plan for SUD treatment
 - Have a plan to ensure the baby is safe



In Summary



1

Alcohol and tobacco are the most dangerous drugs for the fetus in pregnancy.

2

Medication treatment is recommended for opioid use disorder in pregnancy. 3

The postpartum period and after is a high-risk time for relapse and death in women with SUD.

4

Use non-medical treatments first for neonatal opioid withdrawal syndrome.

JULY 2023 REVIEW COURSE 2023



Get in Touch

301.656.3920

@ education@asam.org

www.asam.org

JULY 2023 REVIEW COURSE 2023