

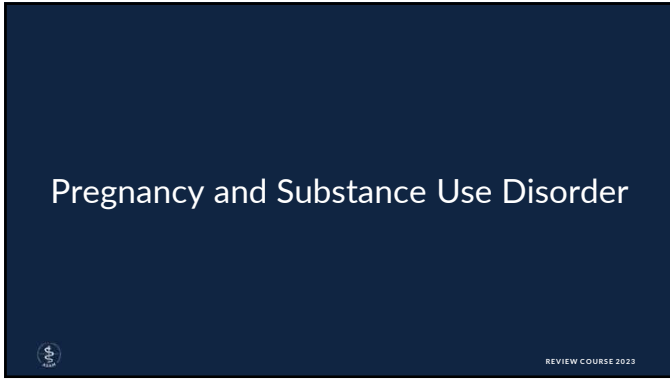
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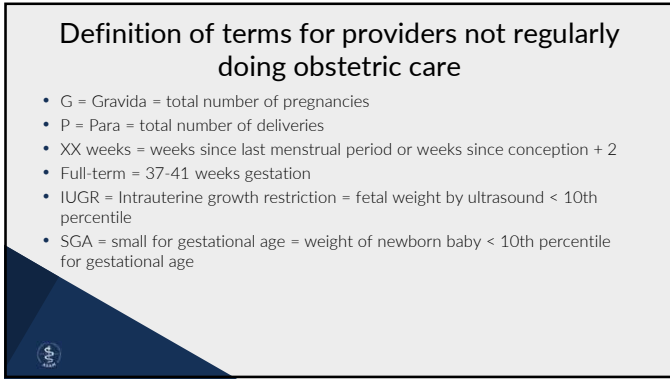
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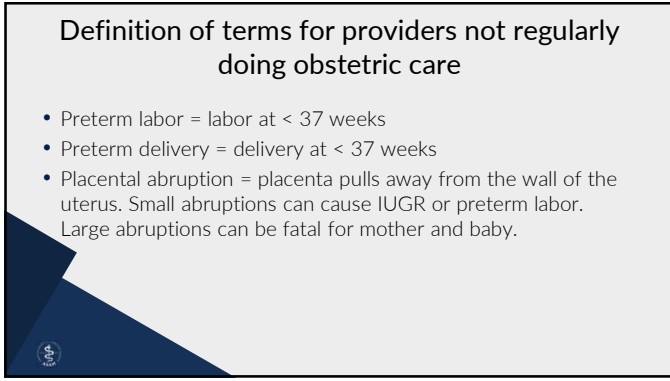
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Case Study

33 yo G4P3 had been stable on buprenorphine-naloxone 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.

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Case Study

22yo G1P0 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.

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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

²Weaver 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*. Walters Kluwer 2019 P. 1315

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Perinatal SBIRT: 4 Ps Plus

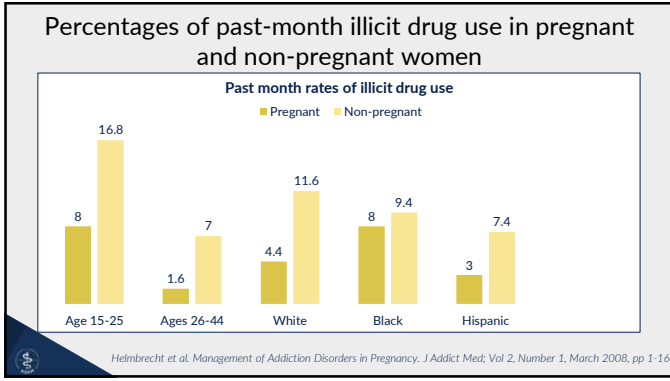
Parents	Did either of your p arents ever have a problem with alcohol or drugs?
Partner	Does your p artner have a problem with alcohol or drugs?
Past	Have you ever had a problem with alcohol or drugs in the p ast?
Past 30 days	In the p ast month, have you drunk any alcohol or used any substances?

¹ACOG committee opinion 711, 2017
²J Perinatol. 2005 Jun;25(6):368-74.

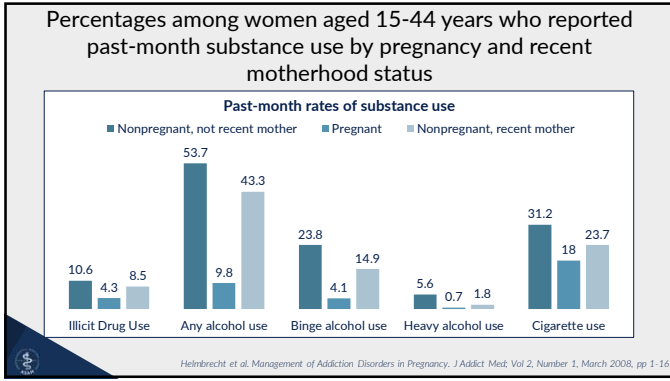
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- What are medical implications of substance use disorder with pregnancy?
- What is the significance of pregnancy for any substance use disorder?

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Birth defects with substances

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

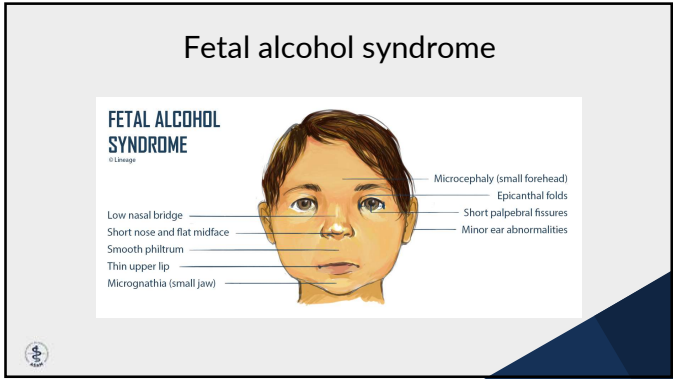
¹Weaver et al. Alcohol and Other Drug Use During Pregnancy: Management of the Mother and Child in Miller et al. The ASAM Principles of Addiction Medicine. Wolters Kluwer 2019.P.1317

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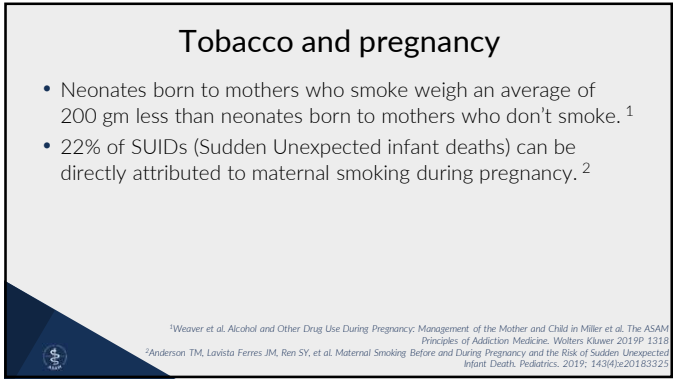
Fetal alcohol syndrome

- 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 vermilion border upper lip, smooth philtrum

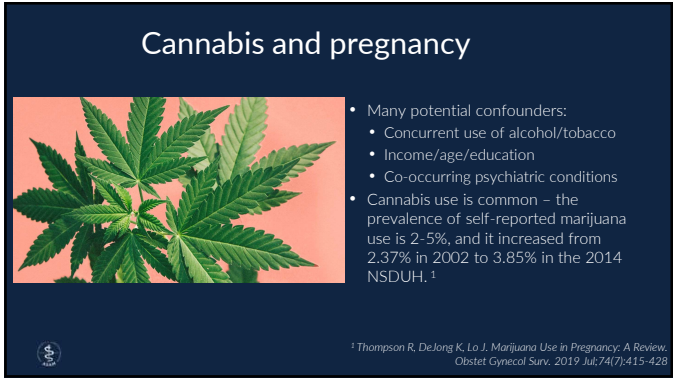
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Cannabis and pregnancy

- 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



¹Badowski S, Smith G. Cannabis use during pregnancy and postpartum. *Can Fam Physician*. 2020;66(2):98-103.

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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 defects⁴, 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

¹Sheryl A. Ryan, Seth D. Aronman, Mary E. O'Connor. COMMITTEE ON SUBSTANCE USE AND PREVENTION, SECTION ON BREASTFEEDING, Lucien Gonzalez, Stephen W. Patrick, Joanne Quilley, Leslie R. Walker, Joan Younger Mink, BSIC, Margaret Johnson, Lisa Stillwagen, 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

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

³Gunn JK et al. Prenatal exposure to cannabis and maternal and child health outcomes: a systematic review and meta-analysis. *BMJ Open*. 2016; Apr; 5(4):e009166. doi: 10.1136/bmjopen-2015-009166.

⁴Carner 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.0000000000001649.

⁵Weaver 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

⁷Nihsied et al. Cannabinoid Exposure: Emerging Evidence of Physiological and Neuropsychiatric Abnormalities. *Frontiers in Psychiatry*. 11:2019

⁸Ramos 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. 2020/02 Feb 17.

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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.

Barbosa-Leiker et al. *Daily Cannabis Use During Pregnancy and Postpartum in a State With Legalized Recreational Cannabis*. *Journal of Addiction Medicine*. November/December 2020 - Volume 14 - Issue 6 - p 467-474

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Stimulant use and pregnancy

- Methamphetamine¹ and cocaine² use are associated with the following:
 - Preterm delivery
 - Low birth weight
 - Small for gestational age infants



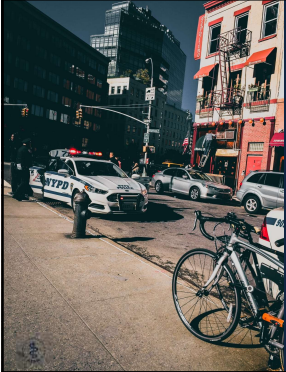
1. Kolaitzopoulos et al. *Effect of Methamphetamine Hydrochloride on Pregnancy Outcome: A Systematic Review and Meta-analysis*. *Journal of Maternal-Fetal & Neonatal Medicine*. 2018; Volume 21, Issue 3, p. 200-206.
2. Seid MC, et al. *Stimulant Use in Pregnancy: An Under-recognized Epidemic Among Pregnant Women*. *Obstet Gynecol*. 2019; 133(1):168-184.

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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.

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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.

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



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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.



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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.

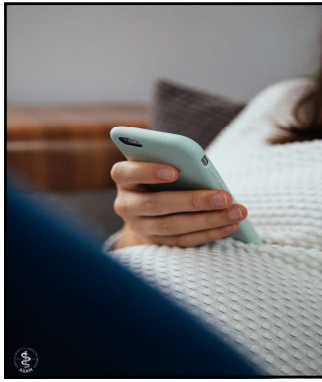


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Implications of substance use disorder with pregnancy

- 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.

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**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.

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

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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

²Bishop et al. Pregnant Women and Substance Use: Overview of Research and Policy in the United States. Bridging the Divide: A Project of the Jacobs Institute of Women's Health. February 2017

31

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

¹Kampman and Jarvis. American Society of Addiction Medicine (ASAM) National Practice Guideline for the Use of Medications in the Treatment of Addiction Involving Opioid Use. J Addict Med 2015;9:358-367

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Medication therapy and pregnancy

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

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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. Kelly 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, Weltz B, Viscanti 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: 31576396.

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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%

1. Ko, J.Y., Tong, V.T., Haight, S.C. et al. Obstetrician-gynecologists' practice patterns related to opioid use during pregnancy and postpartum—United States, 2017. *J Perinatol* **40**, 412–421 (2020).

2. Stephen W. Patrick et al. (2018): Barriers to accessing treatment for pregnant women with opioid use disorder in Appalachian states. *Substance Abuse*

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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

Kraus EE, Kim JY, Chen Q, Rothenberger SD, James AE 3rd, Kelley D, Jarlenski MP. Outcomes associated with the use of medications for opioid use disorder during pregnancy. *Addiction*. 2021 Dec;116(12):3504-3514. doi: 10.1111/add.15582. Epub 2021 Jun 9. PMID: 34033170; PMCID: PMC8578143.

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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 methadone¹

¹Jones, H. et al. Neonatal Opioid Withdrawal Syndrome after Methadone or Buprenorphine Exposure. NEJM, Vol 363, 12/9/10, pp. 2320-31

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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
- Macro dosing may be considered if the patient presents in active withdrawal

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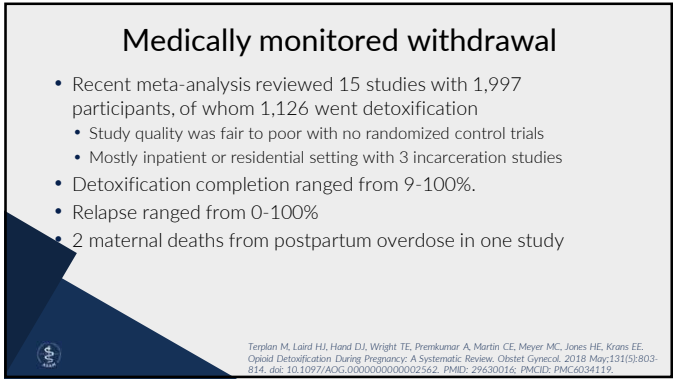
Morning sickness and methadone

- 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

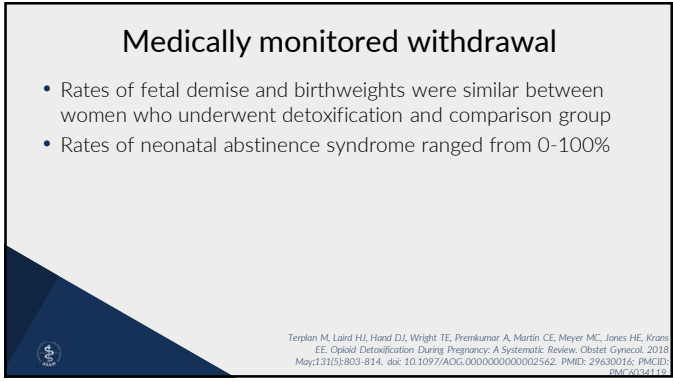
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Medically Monitored withdrawal

- No study of medically monitored withdrawal has examined maternal outcomes postpartum¹

1. Jones et al. Medically Assisted Withdrawal (Detoxification): Considering the Mother-Infant Dyad. J Addict Med 2017 DOI 10.1097

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- 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?

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Labor and delivery


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

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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.

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**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.

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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://pha.health.maryland.gov/mch/Documents/Health-General/20Article%20C29A713-1207%20Annotate%20Code%20of%20Maryland%20-%202021%20Annual%20Report%20%E2%80%93%20Maryland%20Maternal%20Mortality%20Review.pdf> Accessed 2/18/2021

2 Tennessee Maternal Mortality Review of 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

6 Schill et al. Fetal and Neonatal Overdose Among Pregnant and Postpartum Women in Massachusetts. Obstet Gynecol. 2018

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Maternal mortality and substance use disorder

- New Mexico found that 47 % of maternal deaths were connected to substance use.

https://www.nmlegis.gov/handouts/11#RS20103122%20em%201%20Maternal%20Mortality.pdf Accessed 2/14/2023

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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.

¹Campbell et al. Pregnancy-Associated Deaths from Homicide, Suicide, and Drug Overdose: Review of Research and the Intersection with Intimate Partner Violence. *Journal of Women's Health*. Volume 30, Number 2, 2021.
²Margolis et al. Maternal self-harm deaths: an unrecognized and preventable outcome. *American Journal of Obstetrics and Gynecology*. October 2019.

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

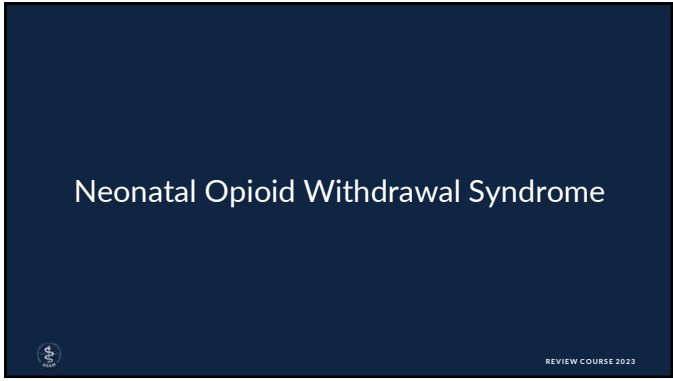
Mothers in Ontario and England with babies who had neonatal abstinence syndrome have a mortality rate that is over ten times as high as mothers who did not have an affected baby.

Roughly 1 in 20 mothers died over the next decade.

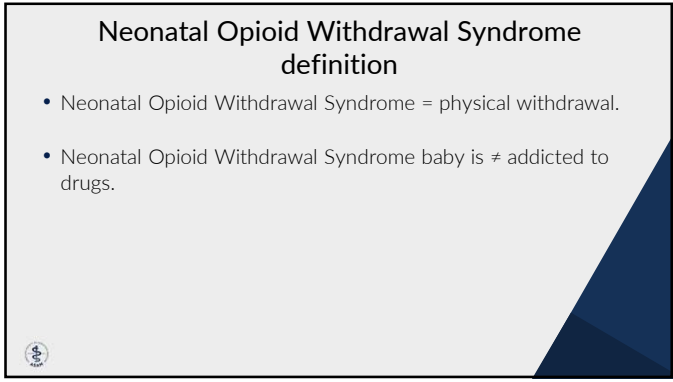
Top cause of death was unintentional injuries, but there were also high rates of murder and suicide, drug-related deaths, and unavoidable deaths.

Guttmann A et al. Long-term mortality in mothers of infants with neonatal abstinence syndrome: A population-based parallel-cohort study in England and Ontario, Canada. *PLoS Med* 16(11): e1002974. November 26, 2019.

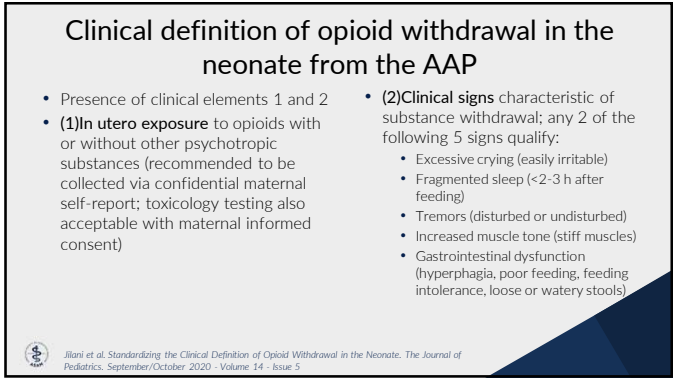
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Non-pharmacologic treatment of Neonatal Opioid Withdrawal Syndrome

- 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.

¹Holmes et al. Rooming-In to Treat Neonatal Opioid Withdrawal Syndrome: Improved Family-Centered Care at Lower Cost. *Pediatrics* 2016; pp 2015-2029
²Grossman et al. An Initiative to Improve the Quality of Care of Infants with Neonatal Opioid Withdrawal Syndrome. *Pediatrics* 2017;139(6)

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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 135-144
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
⁵ACOG Committee Opinion. Opioid Use and Opioid Use Disorder in Pregnancy. Number 711. August 2017.

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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.

Wolf-Wielar, Elizabeth et al. Maternal Mental Health after Custody Loss and Death of a Child: A Retrospective Cohort Study Using Linkable Administrative Data. *The Canadian Journal of Psychiatry*. 2018, Vol. 63(5) 322-328

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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.

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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

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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.

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