BREASTFEEDING AND MATERNAL SUBSTANCE USE

Monica S. McCutcheon, MD, FAAP, IBCLC
Prisma Health Tuomey, Pediatric Hospitalist
SC Birth Outcomes Initiative Virtual Series, 11/4/21

Disclosures

- I have no financial relationships or other conflicts of interest related to the content of this presentation

Objectives

- Demonstrate knowledge of marijuana-derived products and opiates used by lactating women and their various modes of delivery
- Become familiar with marijuana- and opiate-use patterns among women of childbearing age
- List potential risks for infants fed breast milk from a mother who has consumed marijuana or from a mother who has consumed opiates
- Discuss various federal, medical society, and hospital-based recommendations regarding marijuana use pertaining to breastfeeding
- Gain confidence in counseling breastfeeding mothers about substance use

https://www.healthline.com/health-news/opioids-vs-marijuana

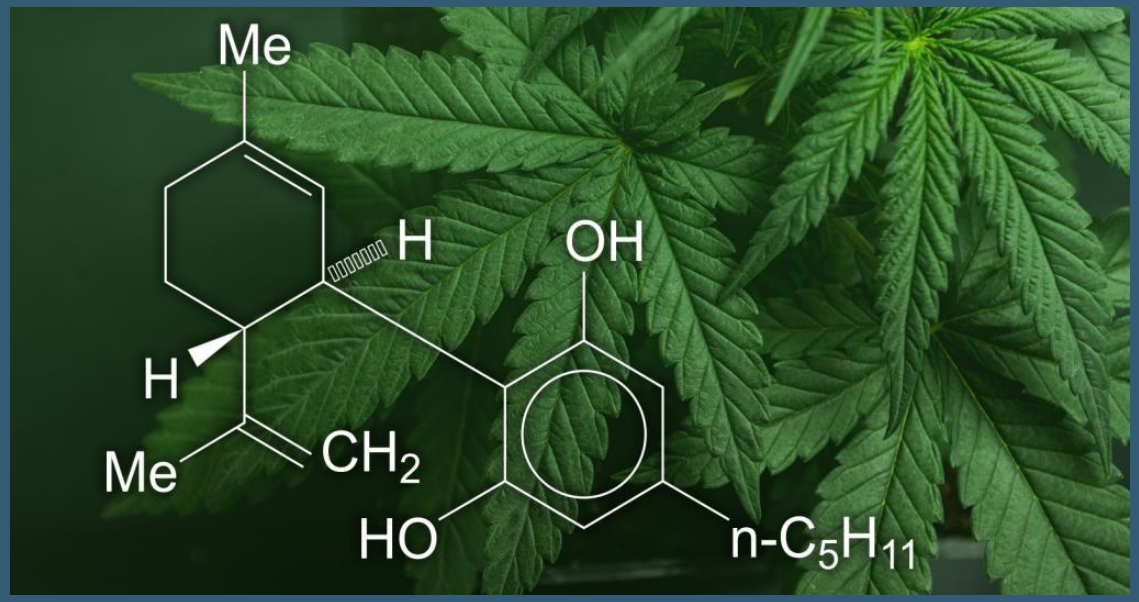
MARIJUANA AND BREASTFEEDING

Objectives

- **Demonstrate knowledge of marijuana-derived products (THC, CBD) used by lactating women and their various modes of delivery**
- Become familiar with marijuana-use patterns among women of childbearing age
- List potential risks for infants fed breast milk from a mother who has consumed marijuana
- Discuss various federal, medical society, and hospital-based recommendations regarding marijuana use pertaining to breastfeeding
- Gain confidence in counseling breastfeeding mothers about marijuana use

https://www.fda.gov

Marijuana: Leaves & Flowers of the Cannabis Plant



- Contains more than 80 biologically active chemical compounds
- **Delta-9-tetrahydrocannabinol (THC)**
  - ❖produces "high" associated with marijuana use
- **Cannabidiol (CBD)**
  - ❖health benefits???
- Plants are grown to produce varying concentrations of cannabinoids

https://www.fda.gov/consumers/consumer-updates/what-you-need-know-and-what-were-working-find-out-about-products-containing-cannabis-or-cannabis

FDA-Approved Cannabinoids

- The FDA has approved only one CBD drug product and three synthetic cannabis-related drug products
  - ❖**Epidiolex** (cannabidiol) oral solution
    - Treatment of seizures associated with 3 rare syndromes
  - ❖**Marinol** (dronabinol), **Syndros** (dronabinol), **Cesamet** (nabilone)
    - Nausea associated with cancer chemotherapy

https://www.fda.gov/news-events/public-health-focus/fda-and-cannabis-research-and-drug-approval-process

WAYS TO CONSUME CANNABIS

INHALATION

WATER PIPES
- Many sizes and designs
- Less carcinogenic compounds
- Water acts as a filter

JOINTS
- Inexpensive
- Popular
- Carcinogenic compounds in smoke
- Increase risk of bronchitis

PENS
- Small size
- No odor
- Huge variety
- Disposable
- Ready to use

VAPES
- No harmful products in smoke
- Minimal odor
- High cost

HAND PIPES
- Best option for smoking
- Better taste
- Smaller doses

DABBING
- Cost effective for high amount of THC
- Higher level of toxic substances,
- Not a good option for newbies

BLUNTS
- Flavored options

ORAL

TINCTURES
- Fast and long lasting dose

INGESTIBLE OILS
- Medical and therapeutical benefits

CHEWING GUM
(NO PSYCHOACTIVE EFFECT)

EDIBLES
- Popular
- Variety of choice
- Longer time to wear off effect
- Lower time to kick off

PILLS OR CAPSULES
- Steady and predictable dose
- Longer effect

DRINKS

CANNABUTTER

TOPICAL (ONLY MEDICAL EFFECT)

SPRAYS

CREAMS

PATCHES

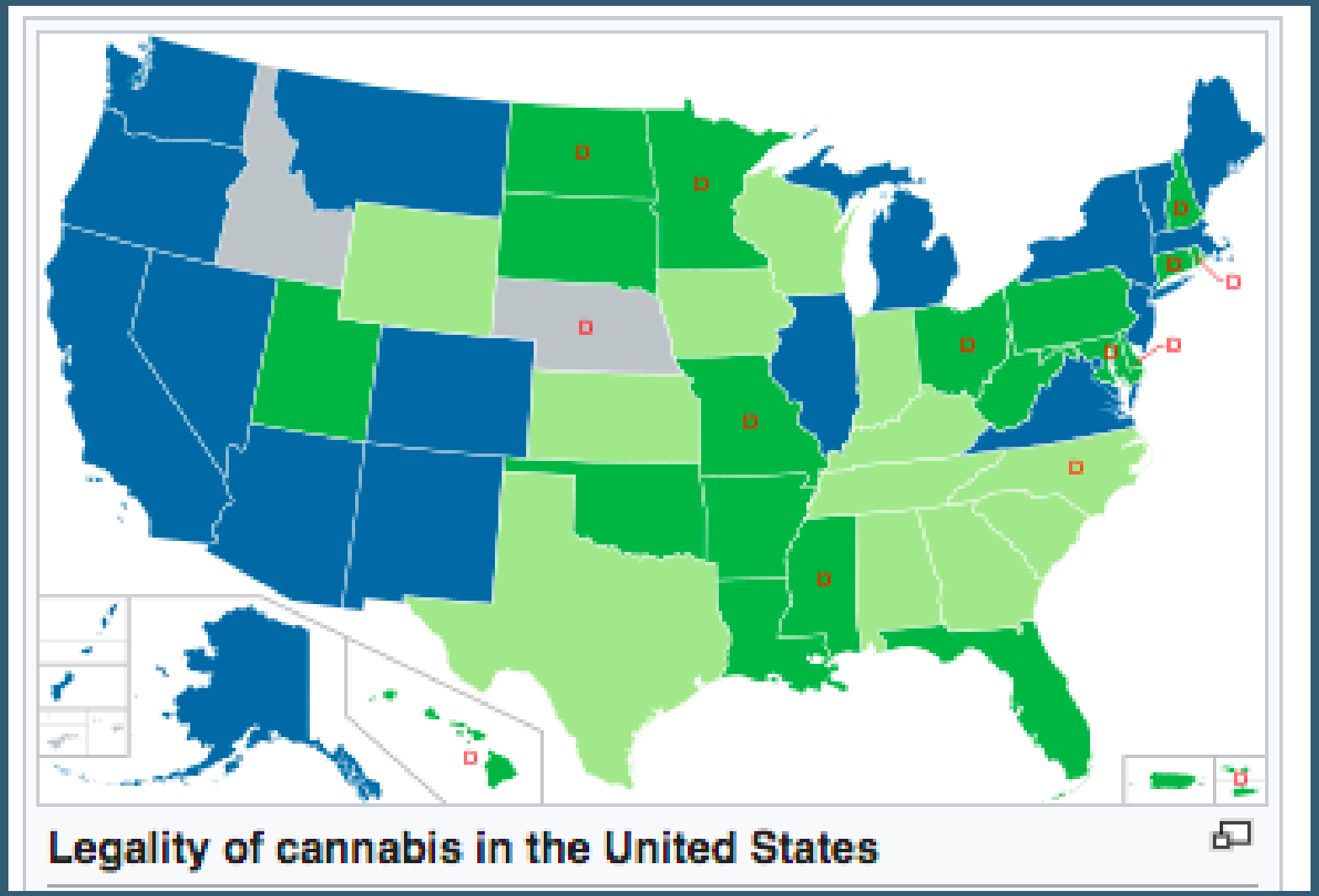
BATH SOAK

https://missionorganiccenter.com/how-to-consume-cannabis-best-ways/

Objectives

- Demonstrate knowledge of marijuana-derived products (THC, CBD) used by lactating women and their various modes of delivery
- **Become familiar with marijuana-use patterns among women of childbearing age**
- List potential risks for infants fed breast milk from a mother who has consumed marijuana
- Discuss various federal, medical society, and hospital-based recommendations regarding marijuana use pertaining to breastfeeding
- Gain confidence in counseling breastfeeding mothers about marijuana use

https://www.fda.gov



https://commons.wikimedia.org/wiki/File:Map_of_US_state_cannabis_laws.svg#/media/File:Map_of_US_state_cannabis_laws.svg

Considerations…

- With legalization, potentially false impression of safety
- Potential for underreporting due to legal concerns
- Marijuana remains Schedule I drug under federal law
  - ❖No RCTs due to ethical concerns
- Available studies have confounding
  - ❖Other drugs
  - ❖Environmental risk factors

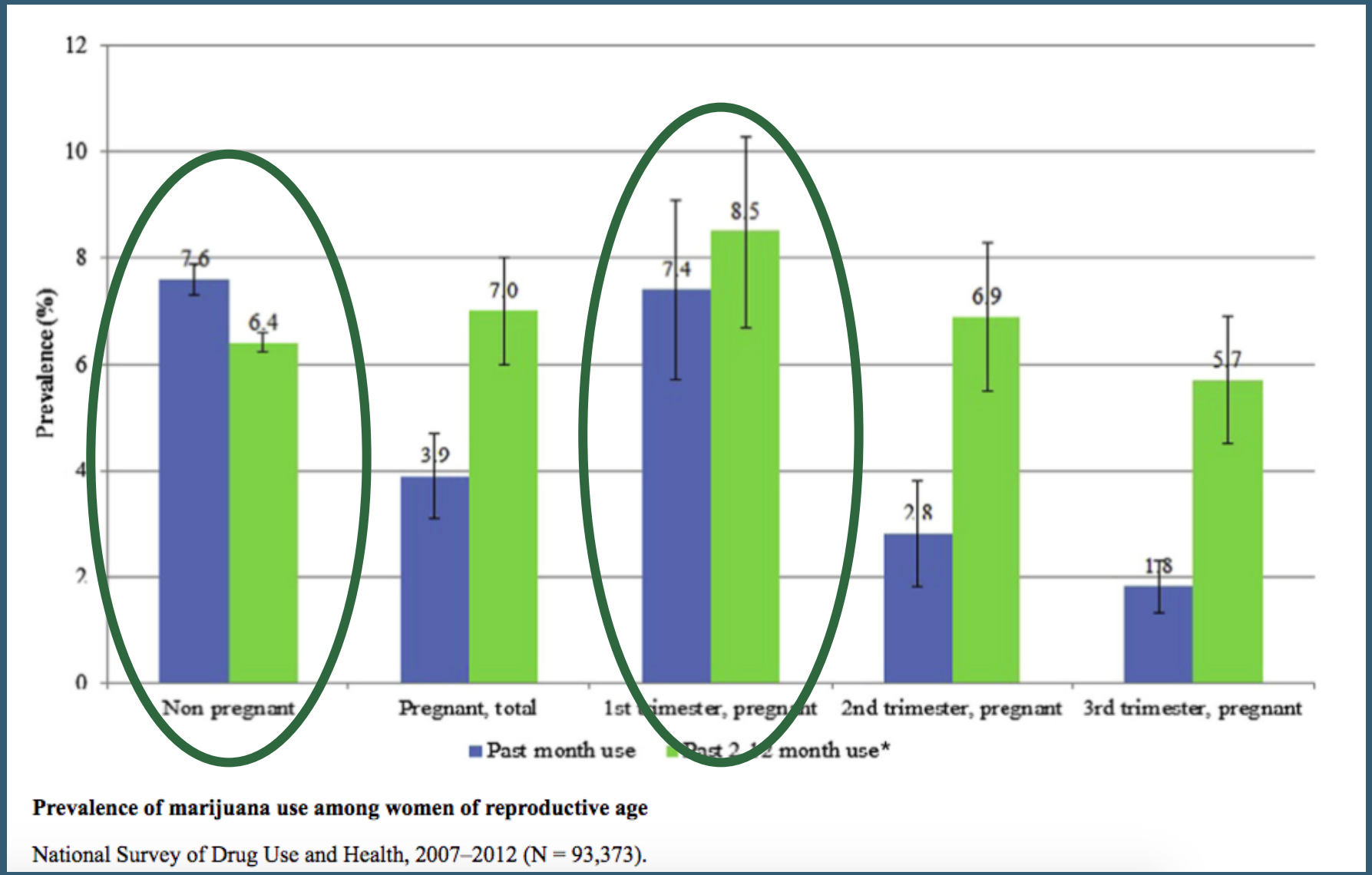
https://www.post-gazette.com/

Marijuana Use During Pregnancy

- Most commonly used illegal substance by pregnant women
- 4.9% of pregnant women aged 15-44 years reported use of marijuana in the past month (2016)
  - ❖8.5% of pregnant women aged 18-25
  - ❖3.3 % of pregnant women aged 26-44
- Highest use in 1st trimester
- 48-60% continue use during entire pregnancy and believe it safer than tobacco

Dom Smith, statnews.com

-2016 National Survey on Drug Use and Health
-Ryan SA, Ammerman SD, O'Connor ME (2018).



Prevalence of marijuana use among women of reproductive age

National Survey of Drug Use and Health, 2007–2012 (N = 93,373).

Ko, JY, et al (2015)

Marijuana Use During Breastfeeding

- Less clear data
- Colorado SNAP Data
  - ❖Of all past or current marijuana users
    - **35.8%** reported use during a pregnancy
    - **41%** reported use since infant was born
    - **18%** used while breastfeeding

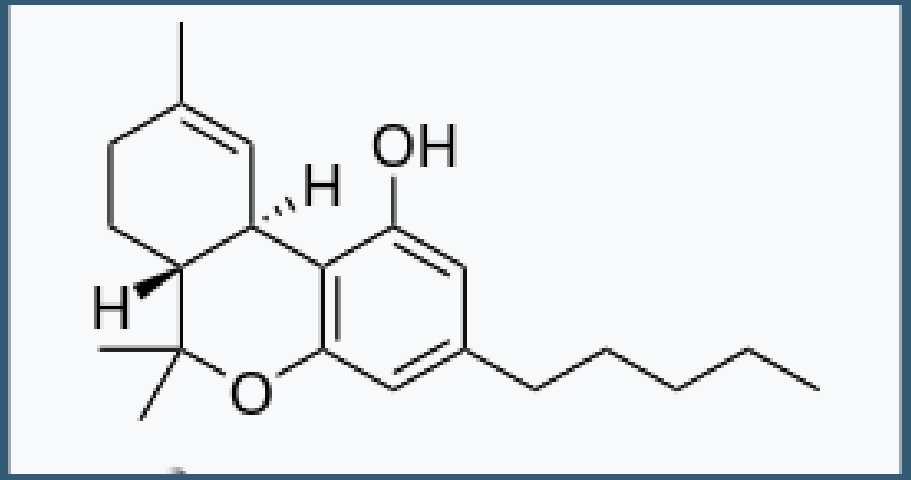
Ryan SA, Ammerman SD, O'Connor ME (2018).

Objectives

- Demonstrate knowledge of marijuana-derived products (THC, CBD) used by lactating women and their various modes of delivery
- Become familiar with marijuana-use patterns among women of childbearing age
- **List potential risks for infants fed breast milk from a mother who has consumed marijuana**
- Discuss various federal, medical society, and hospital-based recommendations regarding marijuana use pertaining to breastfeeding
- Gain confidence in counseling breastfeeding mothers about marijuana use

https://www.fda.gov

THC



- Lipid soluble
  - ❖Transfers into human milk (3-5% fat)
  - ❖Stored in lipid-filled tissues (fat, brain)
- Low molecular weight
- Half-life of 20-36 hours
- % varies among plants
- Acts via cannabinoid receptors (in brain and placenta)
- Endogenous cannabinoids involved in development of nervous system

Warner, T. et al (2014).

Use During **Pregnancy** and Neonatal Outcomes

- Decrease in growth
  - 100 grams less vs. 400 grams for nicotine
  - 50% increased risk of low birth weight regardless of maternal age, race, ethnicity, education, and tobacco use (Colorado data)
- 2x increase in stillbirth
- No association with birth defects
- Unclear risk of prematurity
- Unclear effect on newborn behavior

Healthynewbornnetwork.org

-Crume, TL et al. (2018).
-National Academies of Sciences, Engineering, and Medicine. 2017.

Use During **Lactation** and Neonatal Outcomes

- **Tennes *et al* (1985)**
  - ❖No differences in motor & mental development between exposed and unexposed 12 mo infants
- **Astley and Little (1990)**
  - ❖Psychomotor deficits in 12 mo infants breastfed by mothers using cannabis compared to unexposed

Both considered to have major study flaws, lack of accounting for confounding factors, unclear definitions regarding exclusive breastfeeding

parents.com

How LONG does THC stay in milk?

- 50 breastfeeding women, 88% reported daily use
- THC detectable in 63% of samples up to 6 days after last reported use
- Further study needed
  - ❖Oral absorption?
  - ❖Accumulation patterns?
  - ❖Effect on brain development?

Womenshealthmag.com

Bertrand, KA et al (2018)

How LONG does THC stay in milk?

- 12 women
  - ❖Used marijuana (primarily inhalational) >2x/week prenatally
  - ❖Abstinence postnatally confirmed by plasma samples
- Estimated mean half-life in breastmilk was **17 days**
- Projected time to elimination **>6 weeks**
- Limitation: inability to quantify THC dosage
- Half of recruited mothers failed to abstain

Womenshealthmag.com

Wymore et al (2021)

How MUCH THC gets in milk?

- 8 exclusively breastfeeding mothers who regularly consumed marijuana, 2-5 months post-partum
- Discontinued use x 24 hours

Baseline sample

↓

Smoked pre-weighed, standardized strain

↓

Collected breastmilk samples at 20 minutes, 1, 2, and 4 hours

Milehighmamas.com

Baker, T. et al (2018)

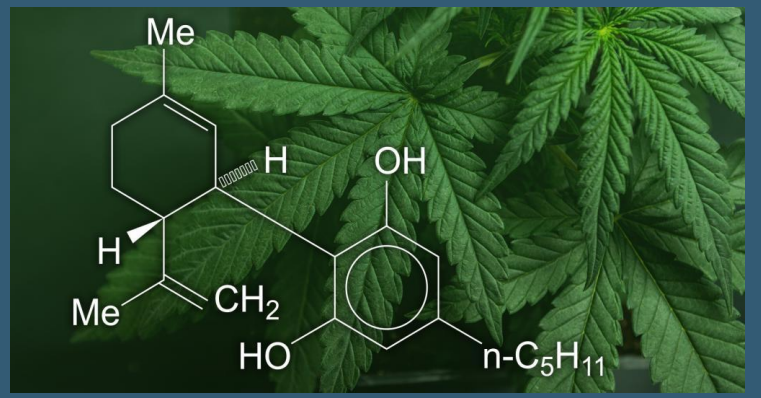
How MUCH THC gets in milk?

- **Mean of 2.5% of maternal dose in milk**
- **Amount peaked at 1 hour post consumption**
- Further study needed:
  - ❖Plasma concentrations?
  - ❖Effect of continuous/repeated doses?
  - ❖Oral cannabis products?
  - ❖Effect on endocannabinoid system?
  - ❖Lasting effect to developing infants?

Milehighmamas.com

Baker, T. et al (2018)

CBD and Pregnancy/Lactation



- **No published research** of effects on
  - ❖developing fetus
  - ❖pregnant mother
  - ❖breastfeeding newborn
- High doses of CBD in pregnant test animals led to problems in reproductive system of male fetuses
- Some amount of CBD is expected to be transferred to breastmilk

https://www.fda.gov/consumers/consumer-updates/what-you-should-know-about-using-cannabis-including-cbd-when-pregnant-or-breastfeeding

Objectives

- Demonstrate knowledge of marijuana-derived products (THC, CBD) used by lactating women and their various modes of delivery
- Become familiar with marijuana-use patterns among women of childbearing age
- List potential risks for infants fed breast milk from a mother who has consumed marijuana
- **Discuss various federal, medical society, and hospital-based recommendations regarding marijuana use pertaining to breastfeeding**
- Gain confidence in counseling breastfeeding mothers about marijuana use

https://www.fda.gov

Nuanced Messages…

Do not breastfeed if you use cannabis

vs

Do not use cannabis if you breastfeed

Considerations when making recommendations…

- Risks of not breastfeeding
- Preterm infants
- Increasing potency of marijuana
- Ability to care for infant may be impaired
- Second-hand exposure
- Toxins in marijuana due to growing practices

FDA (2019)

"strongly advises that during **pregnancy** and while **breastfeeding**, you avoid using CBD, THC, or marijuana in any form"

AAP (2018)

"Maternal substance abuse is not a categorical contraindication to **breastfeeding**"

"Street drugs such as PCP, cocaine, and cannabis can be detected in human milk, and their use by **breastfeeding** mothers is of concern, particularly regarding the infant's long-term neurobehavioral development and thus are contraindicated."

ACOG (2017)

"There are insufficient data to evaluate the effects of marijuana use on infants during **lactation and breastfeeding**, and in the absence of such data, marijuana use is discouraged"

ABM (2015)

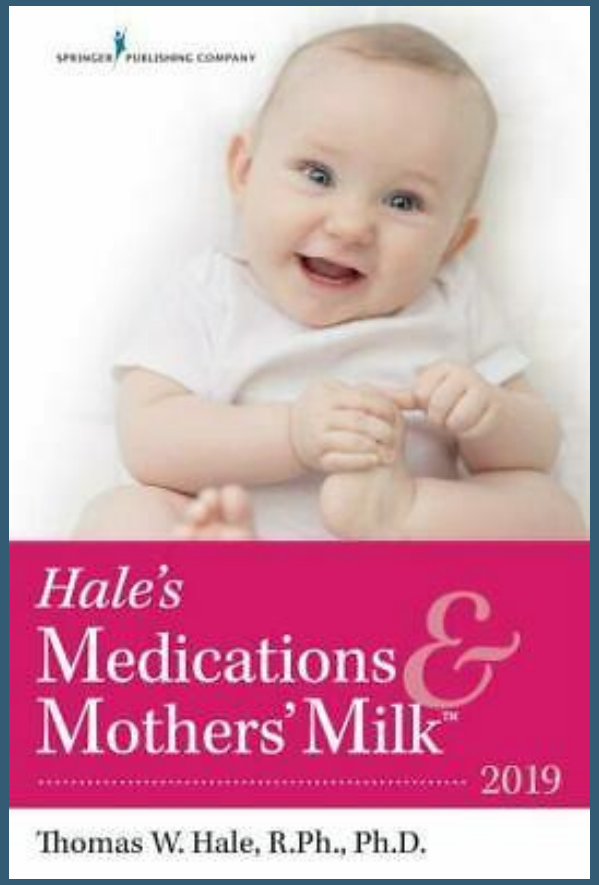
"Information regarding long-term effects of marijuana use by the breastfeeding mother on the infant remains insufficient to recommend complete abstention from breastfeeding initiation or continuation based on the scientific evidence at this time."

"At this time, although the data are not strong enough to recommend not breastfeeding with any marijuana use, we urge caution."

Medications and Mother's Milk

- **L4** (2019)
  - ❖Possibly Hazardous—studies have shown evidence for risk to a nursing infant, but in some circumstances the drug may be used during breastfeeding
- Previously **L5**

  (significant risk, should NOT be used)



LactMed (2016)

- "Although published data are limited, it appears that active components of marijuana are excreted into breastmilk in small quantities"
- "Marijuana use should be minimized or avoided by nursing mothers because it may impair their judgment and childcare abilities"
- "Because breastfeeding can mitigate some of the effects of smoking and little evidence of serious infant harm has been seen, it appears preferable to encourage mothers who use marijuana to continue breastfeeding while minimizing infant exposure to marijuana smoke and reducing marijuana use"

Prisma Health (2021)

"Breastfeeding is not recommended in these circumstances: … Maternal or infant positive test for illegal drugs at delivery"

Prisma Health Acceptable Medical Reasons for Use of Breast Milk Substitutes Appendix 1/7/21

Objectives

- Demonstrate knowledge of marijuana-derived products (THC, CBD) used by lactating women and their various modes of delivery
- Become familiar with marijuana-use patterns among women of childbearing age
- List potential risks for infants fed breast milk from a mother who has consumed marijuana
- Discuss various federal, medical society, and hospital-based recommendations regarding marijuana use pertaining to breastfeeding
- **Gain confidence in counseling breastfeeding mothers about marijuana use**

https://www.fda.gov

Mothers want information!

- HealthTap 2011-2017 (questions to licensed providers)
- ~8% of questions related to perinatal cannabis use
- Average age 27.6 years
  - 25%: cannabis exposure before pregnancy
  - 25%: cannabis exposure during pregnancy
  - 25%: cannabis detection
  - **25%: cannabis exposure postpartum**

fda.gov

Young-Wolff, KC et al (2020)

Mothers want information!

- **25%: cannabis exposure postpartum**
  - "Does smokin weed while breastfeeding effect the childs development?"
  - "Is there a way to safely smoke marijuana while breastfeeding?"
  - "How many times should someone pump and dump after smoking pot so they can continue nursing?"

fda.gov

Young-Wolff, KC et al (2020)

AAP Recommendations

- Counsel pregnant women about lack of definitive research but potential adverse effects
- Counsel adolescents/young women who may become pregnant
- Discuss alternative treatments for nausea/vomiting/pain
- Refer women with +UDS to treatment
- Discourage use during breastfeeding
- Counsel about exposure to second-hand smoke
- **Collaboration: Obstetricians, pediatricians, nurses, IBCLCs/CLCs, SW**

Ryan et al (2018)

What can you say?

pennmedicine.com

- Cannabis does get into the baby and your milk
- Cannabis is stored in fat and brain
- Your baby's brain is growing rapidly and cannabis could alter development
- Breastfeeding is great for a baby's brain
- Pumping/dumping will not work for cannabis (stored for a long time)
- Make sure someone else is available to care for your infant if you use cannabis
- Smoke outside/use a smoking jacket
- **Please do not use cannabis while pregnant or breastfeeding!**

What can you say?

https://www.colorado.gov/pacific/sites/default/files/MJ_RMEP_Pregnancy-Breastfeeding-Clinical-Guidelines.pdf

Your baby and the effects of marijuana use

Marijuana is illegal in the state of South Carolina and under federal law.
"The 2010 Child Abuse and Prevention and Treatment Act requires all states to have policies and procedures for reporting newborns and other children who are exposed to illicit substances under the definition of child abuse and/or neglect."

The American Academy of Pediatrics says that mothers who are pregnant and breastfeeding should not use marijuana.

The chemical tetrahydrocannabinol (THC) in marijuana is passed to your baby during pregnancy and breastfeeding.

- THC is distributed rapidly to your baby's brain after inhalation when you are pregnant.
- Marijuana is transferred into human milk and THC is stored in fat cells, including those of your baby's brain.

Please be aware that any exposure of marijuana to your baby during pregnancy and breastfeeding could affect your baby's ability to learn during all stages of growth and development throughout their life.

If you are pregnant or breastfeeding, please talk with your doctor to get help and stop using marijuana.

Reference: American Academy of Pediatrics Journal Article: Marijuana Use During Pregnancy and Breastfeeding: Implications for Neonatal and Childhood Outcomes

PALMETTO HEALTH

WS-16721

OPIATES AND BREASTFEEDING

Objectives

- **Demonstrate knowledge of opiates used by lactating women**
- Become familiar with opiate-use patterns among women of childbearing age
- List potential risks for infants fed breast milk from a mother who has consumed opiates
- Discuss various federal, medical society, and hospital-based recommendations regarding opiate use pertaining to breastfeeding
- Gain confidence in counseling breastfeeding mothers about opiate use

Lacted.org

Opioid Classification

	Natural (OPIATES)	Semisynthetic	Synthetic
Source	Naturally-occurring	Derived from natural opioids	Synthesized independently
Examples	Morphine Codeine	Heroin Hydromorphone Oxymorphone Hydrocodone Oxycodone	Methadone Fentanyl Meperidine Tramadol

Britannica.com

Scientificamerican.com

Drugabuse.org

Webmd.com

Augustachronicle.com

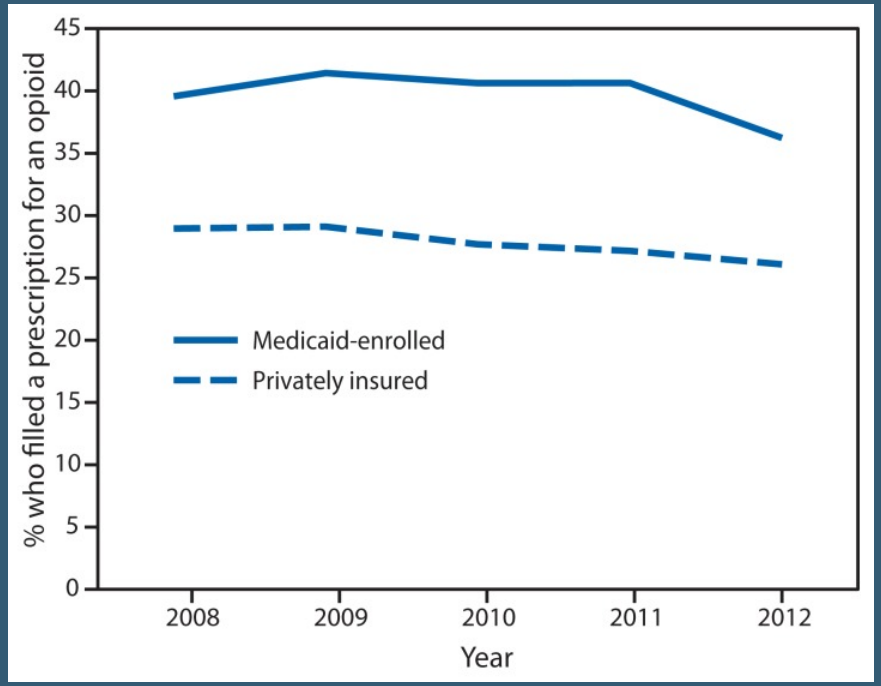
Objectives

- Demonstrate knowledge of opiates used by lactating women
- **Become familiar with opiate-use patterns among women of childbearing age**
- List potential risks for infants fed breast milk from a mother who has consumed opiates
- Discuss various federal, medical society, and hospital-based recommendations regarding opiate use pertaining to breastfeeding
- Gain confidence in counseling breastfeeding mothers about opiate use

Lacted.org

Opiate Use Trends

- 2000—2009: opioid use during pregnancy (prescription opioids and heroin) increased almost 5x
- >25% privately insured and >33% of Medicaid-enrolled women of childbearing age filled a prescription for an opioid each year between 2008-2012
- Most commonly prescribed
  - ❖Hydrocodone
  - ❖Codeine
  - ❖Oxycodone



Ailes *et al.*, 2015

Opiate Use Trends

- Non-medical use of prescription pain relievers and use of heroin increasing as well
- Maternal opioid-related diagnoses (MOD) increased from **3.5** per 1000 delivery hospitalizations in 2010 to **8.2** per 1000 in 2017
- Opioids are routinely prescribed after delivery and thus may involve exposure while breastfeeding

Drugabuse.org

Objectives

- Demonstrate knowledge of opiates used by lactating women
- Become familiar with opiate-use patterns among women of childbearing age
- **List potential risks for infants fed breast milk from a mother who has consumed opiates**
- Discuss various federal, medical society, and hospital-based recommendations regarding opiate use pertaining to breastfeeding
- Gain confidence in counseling breastfeeding mothers about opiate use

Lacted.org

Heroin

- Few studies
- Metabolized to morphine
- Transfers into milk due to high lipid solubility and low protein binding
- Carries additional risk of contamination with other chemicals
- Infants exposed to heroin could have
  - ❖Apnea
  - ❖Cyanosis
  - ❖Withdrawal symptoms (tremors, poor feeding, restlessness, vomiting)

Prescription Opiates

- Potential to cause sedation in breast milk-exposed infants
- If opiates are deemed necessary for pain control, breastfeeding women should receive the lowest effective dose
  - ❖Avoid high doses or doses that cause maternal sedation
- Majority of adverse events for infants occur in the first few weeks of life
- When most opioids are initiated, there is little need to alter breastfeeding

Drugabuse.org

Commonly Prescribed Opiates

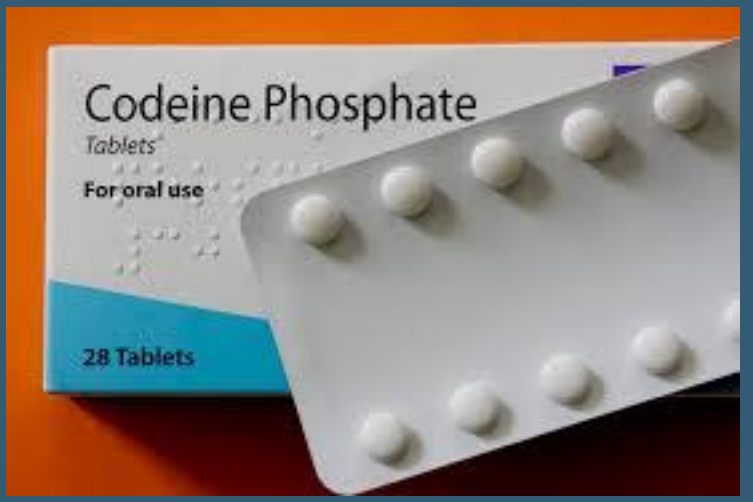
Table 4. Concentrations of opioids in human milk and in infants exposed to human milk.

Drug	Author	No. mothers	Dose	Freq.	Human milk conc.	Infant serum conc.
Morphine	Robieaux[61]	1	5 mg	q6 h	10–100 ng/mL	4 ng/mL
	Feilberg[62]		15 mg IV/IM	Once	500 ng/mL	
	Wittels[63]	5	5–30 mg	q2–3 h	< 64 ng/mL	
	Baka[65]	7	1 mg IV (0.33–0.92 mg/kg/d)	q10 min prn (PCA)	< 1–48 ng/mL	
Oxycodone	Marx[70]	6	5–10 mg	q4–7 h	< 5–226 ng/mL	
	Seaton[71]	50	10 mg	q2 h prn	0–168 ng/mL	7.4 ng/mL¶
	Levine[23]	1	180 mg	In three doses the day prior		600 ng/mL§
Hydrocodone	Anderson[75]	2	5–10 mg	prn	3.1–3.7% RID; (3.1–8.6 mcg/kg/d)	
	Sauberan[76]	30	44–423 mcg/kg/d		2–100 ng/mL (hydrocodone); 0–86.7 ng/mL* (hydromorphone)	
Codeine	Kwit[92]	4	65–190 mg		0 (conc > 4 h after maternal dose)	
	Findlay[93]	2	60 mg	Once	455 ng/mL (cod)	
	Meny[94]	7			34–314 ng/mL (cod); 2–21 ng/mL (mor)	< 0.8–4.5 ng/mL (cod); < 0.5–2.2 ng/mL (mor)
	Koren[23]	1	30 mg	q12 h	87 ng/mL (mor)	70 ng/mL
Hydromorphone	Edwards[77]	8	2 mg IN	Once	0.67% RID	
Methadone	Begg[81]	8	40–105 mg/d		2.1–3.5% RID	
	McCarthy[82]	8	25–125 mg/d		27–260 ng/mL	
	Blinick[84]	10	10–80 mg/d		50–570 ng/mL	
	Pond[85]	2	28–36 mg/d		11–70 ng/mL	
	Kreek[83]	3	25–50 mg/d		10–120 ng/mL	
	Wojnar[86]	12	20–80 mg/d		39–232 ng/mL; 2.1–3.5% RID	0–6.5 ng/mL† 400 ng/mL
	Smialek[27]	1				
	Jansson[87]	8	50–105 mg/d	qd	21–462 ng/mL	2.2–8.1 ng/mL
	Jansson[88]	9	40–110 mg/d	qd	21–314 ng/mL	
	West[26]	1	80 mg	Once		Qualitative detection
Meperidine	Willets[63]	5	IV then PO‡		> 1000 ng/mL at 12 h post delivery; 200 ng/mL at 48 h	
	Peiker[98]	9	50 mg	Once	130 ng/mL after 2 h; 20 ng/mL after 24 h	
	Quinn[99]	2	75 mg; 150 mg	Once	209 ng/mL at 8–12 h; 275 ng/mL at 8–12 h	
	Borgatta[100]	8	25 mg	Once	134–244 ng/mL (1–2 h); 76–318 ng/mL (2–4 h); 0–80 ng/mL (8–10 h)	
	Borgatta[100]	1	75 mg	Once	571 ng/mL (4 h); 224 ng/mL (8 h)	
Tramadol	Ilett[104]	75	100 mg	q6	748 ng/mL (mean)	
Buprenorphine	Grimm[106]	1	8 mg (SL)	Daily	1.0–14.7 ng/mL	
	Linde-malm[48]	7	0.06–0.41 mg/kg/day		4.4–18.1 ng/mL	

Hendrickson and McKeown, 2012

Codeine

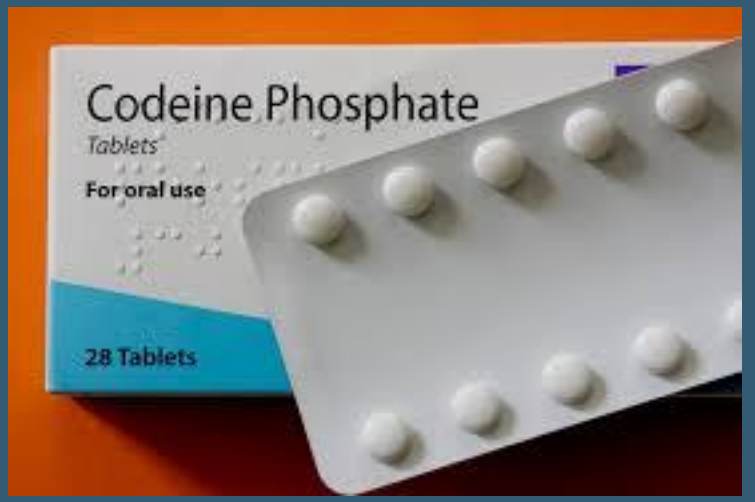
- Caution is urged during lactation due to genetic polymorphism of the CYP2D6 gene
- Presence of the gene codes for CYP2D6, an enzyme that leads to increased formation of morphine from codeine
  - ❖"Ultra-rapid metabolizers" then have elevated morphine blood levels
- Frequency of CYP2D6 ultra-rapid metabolizer genotypes differ by geographic region/ethnicity
  - ❖1% in Finland and Denmark
  - ❖10% in Greece and Portugal
  - ❖29% in Ethiopia



Pharmaceuticaljournal.com

Codeine

- Single case report of a breastfeeding neonatal death after maternal use
  - 13 day old breastfed infant
  - Mother using combination codeine 30mg and acetaminophen 500mg (2 tablets q12 hours)
  - Stored breastmilk from day 10 found morphine 87ng/mL (typical 1.9-20.5 ng/mL at 60mg q6 hrs)
  - Mother found to be ultra-rapid metabolizer



Pharmaceuticaljournal.com

Home > Health Topic > Pregnancy

FDA Warns Against Taking Codeine or Tramadol While Breastfeeding

Written by Ronilee Shye, PharmD, BCGP, BCACP, CDE

August 23, 2019

Use of Codeine and Tramadol Products in Breastfeeding Women - Questions and Answers

Answers to questions about certain opioid medications and their effects on breastfed infants

*If a codeine-containing medication is considered the preferred choice, the risk and benefits and the reasoning behind the FDA warning should be discussed with each family

Medication Assisted Treatment

- Use of medication in addition to counseling and behavioral therapies to treat opioid-use disorders
- Three FDA-approved drugs:
  - Methadone (long-acting opioid, mu agonist)
  - Buprenorphine (long-acting opioid, partial mu agonist)
  - Naltrexone (opioid antagonist)

Medication Assisted Treatment

- National guidelines and international guidelines (ACOG, SAMHSA, WHO) recommend that pregnant women with opioid use disorder (OUD) be treated with **methadone** or **buprenorphine**
  - ❖Long-acting, provide more consistent opioid levels
  - ❖Prevent withdrawal symptoms without causing intoxication, euphoria, or sedation
- Both can lead to neonatal opioid withdrawal syndrome (NOWS)

MAT and Breastfeeding

- Associated with
  - ❖ decreased severity of NOWS
  - ❖ less need for pharmacotherapy
  - ❖ shorter hospital stay for the infant
- Transferred amounts are insufficient alone to prevent symptoms of NOWS

- **Other potential benefits**
  - ❖Bonding
  - ❖Skin-to-skin
  - ❖Maternal confidence
  - ❖Stress reduction
  - ❖Prolongation of substance-abuse free period

- **Potential adverse effects**
  - ❖Lethargy
  - ❖Respiratory difficulty
  - ❖Poor weight gain
  - ❖Abstinence symptoms if breastfeeding abruptly discontinued (gradual weaning advised)

Methadone

- Large body of evidence now supports safety for use during breastfeeding, regardless of dose given to the mother
  - Low levels in milk
  - Low infant plasma levels (<3% of maternal trough concentrations)
  - Calculated infant exposure of <3% of the mother's weight-adjusted dosage
- Two cases of infant toxicity
  - Death of 5 week old whose mother was on methadone maintenance—blood concentrations inconsistent with human milk as the source of methadone
  - Apnea requiring multiple doses of naloxone in 13 month old—mother ingested two doses of 40mg methadone for acute pain 2 hours prior to breastfeeding; both mother and child methadone naïve

Methadone

- No effects on infant neurobehavior at 30 days in infants exposed prenatally and through human milk (Jansson LM, Choo R, Velez ML *et al.*, 2008)
- Ongoing longitudinal follow-up study (Logan BA, Brown MS, Hayes MJ, 2013)
  - ❖Neurocognitive delays in methadone-exposed 1 month olds compared with demographically-matched non-exposed
  - ❖Similar to non-exposed at 7 months

Buprenorphine

- Excreted into milk and achieves similar level to that of maternal plasma
- Poor oral bioavailability
- Infant exposure of up to 2.4% of maternal weight-adjusted dose
- Labeling for buprenorphine (Subutex) and buprenorphine/naloxone combinations (Suboxone) states that use is not advised by lactating women
  - ❖Animal lactation studies showed decreased milk production and viability of the offspring
  - ❖Unknown significance in humans

Table 3. Reported cases of opioid-related severe adverse events potentially related to infant exposure through human milk.

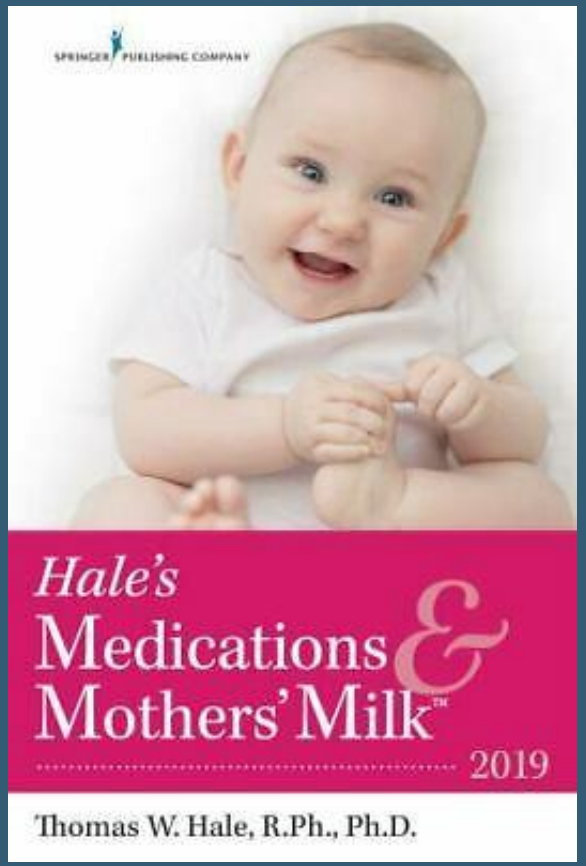
Reference	Substance	No. of infants	Dose ingested	Infant age	ADR	Notes
Smith[17] (abstract)	Codeine	1	30 mg (6 d prior)	7 d	Bradycardia, CNS depression	Dose 6 d prior to symptoms – unlikely related to codeine. No UIA
Davis[18] (abstract)	Codeine	4	60 mg (q4–6 h)[22]	4–6 d	Apnea (4), bradycardia (1)	No UIA
Naumberg[19]	Codeine	10	NR	1–7 d	Apnea, bradycardia, cyanosis	
Ito[95]	Codeine	7	NR	< 1 m	Drowsiness (5) constipation (2)	
Madadi[89]	Codeine	17	1.62 ± 0.79 mg/kg/d	3 d–4 m	Death (1), sedation (17), poor breathing (4)	Same death reported by Koren below
Koren[22]	Codeine	1	30 mg q12 h	13 d	Death	Mother ultra-rapid CYP2D6 metabolizer
Levine[23]	Oxycodone	1	60 mg × 3 doses (1 d prior)	10 m	Death	Likely oral ingestion, not human milk exposure
Bodley[24]	Hydrocodone	1	20 mg	18 d	Drowsiness	No UIA
Meyer[25]	Methadone/ hydrocodone	1	NR	5 w	CNS depression, apnea, cyanosis	UIA positive for opioids in infant
West[26] (abstract)	Methadone	1	40 mg PO × 2	13 m	CNS depression, apnea	UIA positive for methadone in infant. Large maternal methadone dose

UIA = urine immunoassay; d = days; m = months; w = weeks; NR = Not Reported.

Hendrickson and McKeown, 2012

Safety Classifications

- Methadone and Buprenorphine—L2
  - ❖**Probably Compatible**: Drug which has been studied in a limited number of breastfeeding women without an increase in adverse effects in the infant. And/or, the evidence of a demonstrated risk which is likely to follow use of this medication in a breastfeeding woman is remote
- Other opiates
  - ❖L2 (safer): Fentanyl
  - ❖L3 (moderately safe): Morphine, hydrocodone, oxymorphone, oxycodone, tramadol
  - ❖L4 (possibly hazardous): Codeine, meperidine
  - ❖L5 (contraindicated): Heroin



LactMed (2021)

- **Methadone**: "Women who received methadone maintenance during pregnancy and are stable should be encouraged to breastfeed their infants postpartum, unless there is another contraindication, such as use of street drugs."

- **Buprenorphine**: "Because of the low levels of buprenorphine in breastmilk, its poor oral bioavailability in infants, and the low drug concentrations found in the serum and urine of breastfed infants, its use is acceptable in nursing mothers. "

LactMed (2021)

- **Oxycodone**: "Once the mother's milk comes in, it is best to provide pain control with a nonnarcotic analgesic and limit maternal intake of oral oxycodone (and combinations) to 2 to 3 days, especially in the outpatient setting…Other agents are preferred over oxycodone during breastfeeding."

- **Codeine**: Maternal use of codeine during breastfeeding can cause infant drowsiness, central nervous system depression and possibly even death, with pharmacogenetics possibly playing a role…Numerous professional organizations and regulatory agencies recommend that other agents are preferred over codeine or to avoid codeine completely during breastfeeding."

Other Considerations

- Breastfeeding should be encouraged in women who are stable on their opioid agonist and monitored by a drug treatment program
- Women should be counseled about the need to suspend breastfeeding in the event of a relapse to illicit drug use
  - ❖Need for continued follow-up with healthcare providers and counselors
- Breastfeeding is **not** recommended if using illicit drugs
- Breastfeeding is **not** recommended with maternal HIV
- A mother with chronic hepatitis B or C virus infection may breastfeed as long as she does not have cracked or bleeding nipples or suspected blood in her milk

Objectives

- Demonstrate knowledge of opiates used by lactating women
- Become familiar with opiate-use patterns among women of childbearing age
- List potential risks for infants fed breast milk from a mother who has consumed opiates
- **Discuss various federal, medical society, and hospital-based recommendations regarding opiate use pertaining to breastfeeding**
- Gain confidence in counseling breastfeeding mothers about opiate use

Lacted.org

SAMSA (2021)

SAMHSA
Substance Abuse and Mental Health Services Administration

"Women who are pregnant or breastfeeding can safely take **methadone**."

"**Buprenorphine** may be prescribed to women who are pregnant and have an OUD. Buprenorphine and methadone are considered the treatments of choice for OUD in pregnant and breastfeeding women."

AAP (2018)

"Maternal substance abuse is not a categorical contraindication to breastfeeding"

"Street drugs such as PCP, cocaine, and cannabis can be detected in human milk, and their use by breastfeeding mothers is of concern, particularly regarding the infant's long-term neurobehavioral development and thus are contraindicated."

ACOG (2017)

"Breastfeeding should be encouraged in women who are stable on their opioid agonists, who are not using illicit drugs, and who have no other contraindications, such as human immunodeficiency virus (HIV) infection. Women should be counseled about the need to suspend breastfeeding in the event of a relapse."

ABM (2015)

Methadone: "…given that there is increasing evidence supporting the conclusion that there is a reduction in the severity and treatment of NAS when mothers on methadone maintenance therapy breastfeed, breastfeeding for these dyads should be encouraged."

Buprenorphine: "Multiple small case series have examined maternal buprenorphine concentrations in human milk. All concur that the amounts of buprenorphine in human milk are small and unlikely to have short-term negative effects on the developing infant."

Other opioids: "Short courses of most other low-dose prescription opioids can be safely used by a breastfeeding mother, but caution is urged with codeine…"

AWHONN (2016)

"AWHONN recommends the promotion of breastfeeding for women who receive medication-assisted treatment (MAT) for opioid use disorders."

"Breastfeeding should be encouraged for all mothers who receive MAT as long as they abstain from the use of other illicit substances."

Prisma Health (2021)

"Breastfeeding is not recommended in these circumstances: … Maternal or infant positive test for illegal drugs at delivery"

Prisma Health Acceptable Medical Reasons for Use of Breast Milk Substitutes Appendix 1/7/21

Objectives

- Demonstrate knowledge of opiates used by lactating women
- Become familiar with opiate-use patterns among women of childbearing age
- List potential risks for infants fed breast milk from a mother who has consumed opiates
- Discuss various federal, medical society, and hospital-based recommendations regarding opiate use pertaining to breastfeeding
- **Gain confidence in counseling breastfeeding mothers about opiate use**

Lacted.org

Breastfeeding Rates with MAT

- Less than half of initiation rates reported in the US general population
  - ❖24-46% compared with 77%
- Hicks J, Morse E, Wyant DK, 2018 (n=30)
  - ❖Majority of women initiated breastfeeding, 10% continued for >1 month
- Yonke *et al.* 2020 (n=40)
  - ❖75% initiated breastfeeding, 50% continued at 4-8 weeks
- With benefits for both mother and infant, important to provide ongoing lactation support to this group of mothers
- Reported motivators:
  - ❖Infant health
  - ❖Bonding

Potential Barriers

- Separation from infant
  - ❖NICU admission
  - ❖Prolonged hospital stay for infant after maternal discharge
  - ❖Required daily commutes to treatment centers
- Physiologic effects of opioids on infants
  - ❖Hypertonicity, irritability, disorganized sucking

Potential Barriers (continued)

- Lack of support from healthcare community
  - ❖No discussion/education (reported by ~1/3 in one study)
  - ❖Discouragement
  - ❖Undermining efforts

> *"And I don't think a lot of those nurses are used to having women on methadone come in, and so they thought I was a bad mother and they wanted to give her formula…I was pumping constantly so they wouldn't have to give her formula…"*

Demirci JR, Bogen DL, Klionsky Y (2015)

Potential Barriers (continued)

- Misinformation about dangers of breastfeeding while on MAT

"But I also in the back of my head, I keep thinking about it because no one has ever told me—[I've] heard of lot of stories of babies OD'ing on methadone. I never [seen it], so I don't know. But it still sticks in the back of my head. I don't know why."

"I don't want her to be all high or nothing, you know, because I am on a high dose [of methadone]."

Demirci JR, Bogen DL, Klionsky Y (2015)

Potential Barriers (continued)

- Psychological and social barriers
  - ❖Lack of breastfeeding role models
  - ❖Lower tolerance for set-backs or discomfort
  - ❖Hx of physical or sexual abuse→Apprehension of STS and breast exposure
  - ❖Lack of partner support

"My husband doesn't want me to breastfeed, because he worries about the methadone in the breast milk. [The baby] is going to go through withdrawals and is going to be addicted to my breast milk, as my husband would say…And I'm trying to convince him."

Demirci JR, Bogen DL, Klionsky Y (2015)

Suggestions for Interventions

- Education
  - ❖Inclusion of partners and peers
  - ❖Up-to-date information on contraindications
  - ❖Address misconceptions
- Promotion
  - ❖General breastfeeding benefits
  - ❖Benefits specific to NOWS
- Rooming-in when feasible
- Strong social support and treatment follow-up
- Appropriate recognition and treatment of NOWS

References

1. Ailes, EC et al. (2015). Opioid prescription claims among women of reproductive age — United States, 2008–2012. *MMWR Morbity and Mortality Weekly Report, 64*.
2. American College of Obstetricians and Gynecologists (2017). Marijuana use during pregnancy and lactation. Committee Opinion No. 722. *Obstetrics and Gynecology*, 130(4):e205-e209.
3. American College of Obstetricians and Gynecologists (2017). Opioid Use and Opioid Use Disorder in Pregnancy, Committee Opinion No. 711. *Obstetrics and Gynecology*, 130:e81–94.
4. Astley SJ, Little RE (1990). Maternal marijuana use during lactation and infant development at one year. *Neurotoxicology and Teratology*, 12 (2): 161-168.
5. Baker, T. et al (2018). Transfer of inhaled cannabis into human breast milk. *Obstetrics and Gynecology, 131* (5), 783-788.
6. Bertrand, KA et al (2018). Marijuana use by breastfeeding mothers and cannabinoid concentrations in breast milk. *Pediatrics.* Published online August 27 2018.
7. Cleveland, L.M. (2016). Breastfeeding recommendations for women who receive medication-assisted treatment for opioid use disorders: AWHONN practice brief number 4. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 45* (4): 574-576.
8. Crume, TL et al. (2018). Cannabis use during the perinatal period in a state with legalized recreational and medical marijuana: the association between maternal characteristics, breastfeeding patterns, and neonatal outcomes. *Journal of Pediatrics,* 197:90-96.

References

9. Demirci, JR, Bogen DL, Klionsky, Y (2015). Breastfeeding and methadone therapy: The maternal experience. *Substance Abuse, 36* (2): 203-208.
10. FDA (2019). What you should know about using cannabis including CBD when pregnant or breastfeeding. https://www.fda.gov/consumers/consumer-updates/what-you-should-know-about-using-cannabis-including-cbd-when-pregnant-or-breastfeeding
11. FDA (2020). FDA and cannabis research and drug approval process. https://www.fda.gov/news-events/public-health-focus/fda-and-cannabis-research-and-drug-approval-process
12. FDA (2020). What you need to know and what we're working to find out about products containing cannabis. https://www.fda.gov/consumers/consumer-updates/what-you-need-know-and-what-were-working-find-out-about-products-containing-cannabis-or-cannabis
13. Hale, TW (2019). *Medications and Mother's Milk*.
14. Hendrickson, R. G. & McKeown, N. J. (2012). Is maternal opioid use hazardous to breast-fed infants? *Clinical Toxicology, 50*: 1-14.
15. Hicks, J, Morse, E, and Wyant D. (2018). Barriers and facilitators of breastfeeding reported by postpartum women in methadone maintenance therapy. *Breastfeeding Medicine, 13* (4): 259-265.
16. Hirai, AH, Ko, JY, & Owens, PL, et al. (2021). Neonatal Abstinence Syndrome and Maternal Opioid-Related Diagnoses in the US, 2010-2017. *JAMA*, 325(2):146-155.
17. Ko, JY, et al (2015) Prevalence and patterns of marijuana use among pregnant and nonpregnant women of reproductive age. *American Journal of Obstetrics and Gynecology, 213* (2): Epub 2015 Mar 12
18. LactMed (2016). US National Library of Medicine TOXNET Data Network.

References

19. National Academies of Sciences, Engineering, and Medicine. 2017. *The health effects of cannabis and cannabinoids: Current state of evidence and recommendations for research*. Washington, DC: The National Academies Press.

20. Reece-Stremtan, S & Marinelli, K. (2015). ABM Clinical Protocol #21: Guidelines for Breastfeeding and Substance Use or Substance Use Disorder, Revised 2015. *Breastfeeding Medicine*, 10(3): 135–141.

21. RTI International (2016). 2016 National Survey on Drug Use and Health

22. Ryan SA, Ammerman SD, O'Connor ME (2018). Marijuana use during pregnancy and breastfeeding: implications for neonatal and childhood outcomes. *Pediatrics, 142*. Published online August 27 2018.

23. Sach, H. C. and Committee on Drugs (2013). The transfer of drugs and therapeutics into human breast milk: an update on selected topics. *Pediatrics, 132* (3): e796-e809.

24. Tennes K, Avitable N, Blackard C et al (1985). Marijuana: prenatal and postnatal exposure in the human. *NIDA Research Monographs, 59*: 48-60.

25. Warner, T. et al (2014). It's Not Your Mother's Marijuana: Effects on Maternal-Fetal Health and the Developing Child. *Clinics in Perinatology, 41* (4): 877-894

26. Wymore et al. (2021). Persistence of delta 9 tetrahydrocannabinol in human breast milk. *JAMA Pediatrics*. Published online March 8 2021.

27. Yonke N et al. (2020). Breastfeeding motivators and barriers in women receiving medications for opiate use disorder. *Breastfeeding Medicine, 15* (1): 17-23.

28. Young-Wolff, KC et al (2020). Women's questions about cannabis use and health providers' responses. *Journal of Women's Health*. Published online January 30 2020.